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Highlights

- Mimicking Malignant Brain Patient with Wernicke's Aphasia
- A Rare and Fatal Complication Neurological Symptoms in Patients

Discovering Thoughts, Inventing Future

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Clinical Case: Neurocognitive Evaluation in an Adult Patient with Wernicke's Aphasia

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Abstract- Wernicke's aphasia (AW) is a language disorder characterized by the inability to understand and repeat spoken language, the product of a lesion in an area of the left temporal lobe affecting the connection between the motor center and the sensory center. The objective of the present work is the cognitive evaluation of a 55-year-old adult patient with Wernicke's aphasia after asymptomatic ischemic event, with left Tempor-Parietal localization, through the neuropsychological and psychological consultation, clinical history and application of protocol for cognitive deterioration and Boston Test for diagnosis of Aphasia. identify areas and skills affected and conserved, which will direct the rehabilitation process in the future.

Keywords: *cognitive profile aphasia of wernicke. temporo-parietal left. cognitive impairment.*

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Clinical Case: Neurocognitive Evaluation in an Adult Patient with Wernicke's Aphasia

Caso Clínico: Evaluación Neurocognitiva En Un Paciente Adulto Con Afasia De Wernicke

Elisama E. Beltrán De La Rosa [α], Miguel Montañez Romero [σ] & Cirit Mateus De Oro [ρ]

Resumen- La afasia de Wernicke (AW) un trastorno del lenguaje que se caracteriza por la incapacidad para comprender y repetir el lenguaje hablado, producto de una lesión en un área del lóbulo temporal izquierdo afectando la conexión entre el centro motor y el sensorial. El objetivo del presente trabajo consiste en la evaluación cognitiva, de un paciente adulto de 55 años de edad, con afasia de Wernicke posterior a evento isquémico asintomático, con localización Temporo-Parietal izquierda, a través de la consulta neuropsicológica y psicológica, historia clínica y aplicación de protocolo para deterioro cognitivo y Test de Boston para diagnóstico de Afasia. Los resultados, permitieron establecer un perfil neuropsicológico que ayudó a identificar áreas o habilidades afectadas y conservadas, las cuales permitirán direccionar el proceso de rehabilitación a futuro. Todo ello nos permite concluir que no solo es evaluar al paciente con afasia de Wernicke en el lenguaje como tradicionalmente se aplica; si no evaluar el resto de funciones cognitivas, en procura de mejorar y mantener la calidad de vida en el paciente.

Palabrasclave: *perfil cognitivo; afasia de wernicke; temporo-parietal izquierda; deterioro cognitivo.*

Abstract- Wernicke's aphasia (AW) is a language disorder characterized by the inability to understand and repeat spoken language, the product of a lesion in an area of the left temporal lobe affecting the connection between the motor center and the sensory center. The objective of the present work is the cognitive evaluation of a 55-year-old adult patient with Wernicke's aphasia after asymptomatic ischemic event, with left Tempor-Parietal localization, through the neuropsychological and psychological consultation, clinical history and application of protocol for cognitive deterioration and Boston Test for diagnosis of Aphasia. The results allowed us to establish a neuropsychological profile that helped identify areas and skills affected and conserved, which will direct the rehabilitation process in the future. All this allows us to conclude that it is not only to evaluate the patient with Wernicke's aphasia in the language as it is traditionally applied; if not evaluate the rest of cognitive functions, in order to improve and maintain the quality of life in the patient.

Keywords: *cognitive profile aphasia of wernicke. temporo-parietal left. cognitive impairment.*

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I. Introducción

La afasia de Wernicke (AW), conocida también como afasia sensorial, afasia fluente, afasia receptiva, o afasia de comprensión; (Ardila, Roselli 2007) se define como un trastorno del lenguaje consistente en la incapacidad para comprender y repetir el lenguaje hablado, producto de una lesión en un área del lóbulo temporal izquierdo afectando la conexión entre el centro motor y el sensorial. (Martínez, 2008).

Según los antecedentes de las afasias, en 1863 el medico Paul Broca, al estudiar 25 casos, encontró alteraciones en el habla asociadas a lesiones en el hemisferio izquierdo del cerebro, en el área, actualmente conocida como área de Broca. Este médico propone que esta área localizada en la tercera circunvolución frontal izquierda es la encargada de coordinar la articulación del lenguaje, alteración misma que nombró, primeramente, como afemia, (Tirapu, Ríos y Maestú 2011). para describir el fenómeno que estaba observando, posteriormente, el termino fue cambiado por el de afasia, para describir la pérdida del habla causada por una pérdida de las ideas, mientras que afemia sugería la presencia de las ideas, pero la ausencia del habla para expresarla. Sin embargo, esto no próspero, adoptándose el termino de afasia para describir cualquiera de los dos fenómenos. (Fajardo y Moya 2002) no obstante, el impacto de los trabajos de Broca impulsó el estudio de las bases anatómicas del lenguaje.

Por otro lado, el neurólogo alemán, Carl Wernicke, en 1874 estudio una serie de pacientes con daño en el lóbulo temporal, en una zona muy cercana a la descubierta por Paul Broca, es así como discrepó con la teoría de Broca y demostró que esta área no era la única zona implicada en la producción del lenguaje,

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ya que una lesión en el área de Wernicke provocaba síntomas distintos a los descubiertos por Broca: el paciente era incapaz para comprender y repetir el lenguaje hablado, pero sí eran capaces de hablar, es decir, de emitir sonidos mediante el movimiento de ciertos músculos. Una lesión en el área de Wernicke no produce ninguna afección al oído ni parálisis de ningún tipo, en su trabajo identifica como 1 de 2 áreas encontradas en la corteza cerebral que maneja el habla. (Javed y Wroten 2019).

Es importante tener en cuenta, según, (Fajardo et al., 2002) que el predominio de la actividad lingüística es la principal característica del hemisferio izquierdo, realizando las siguientes funciones: con respecto al lenguaje, al procesamiento, al control motor, memoria y aprendizaje y la percepción.

Lo anterior, muestra la complejidad de la alteración en el lenguaje, por lo tanto, se hace necesario, realizar no solo la evaluación del lenguaje en la AW, si no a la vez evaluar otras áreas que sus resultados faciliten futuras intervenciones, que promuevan estrategias de rehabilitación en la recuperación de la mayoría de habilidades posibles, facilitando la adaptación de la persona a su nueva condición.

De esta forma perfila la neuropsicología como la encargada de analizar el perfil cognitivo que presenta la persona tras una alteración neurológica que ha provocado el cuadro de afasia. Pues bien, observamos que lo patognomónico de la AW son las alteraciones del lenguaje y en cascadas otras funciones cognitivas pueden irse alterando: funciones ejecutivas, memoria de trabajo. Por lo tanto, la evaluación tiene varios propósitos encontrar los procesos comprometidos, determinar la severidad del trastorno, (González, y Hornauer 2014) e identificar las habilidades conservadas, lo que precisa el desarrollo de actividades de rehabilitación.

La AW se caracteriza por presentar alteraciones relacionadas con el lenguaje, lo que se puede ilustrar en la tabla N° 1, tal como lo muestra Ardila et al en el 2007 Este trastorno del lenguaje, suele caracterizarse, además, por una mala comprensión del habla y la producción de un habla sin significado, puede, en su discurso dar la impresión de que es gramaticalmente correcta. Es decir, la persona utiliza palabras funcionales como "*el*" y "*pero*", emplea tiempos verbales complejos y oraciones subordinadas, sin embargo, utiliza pocas palabras con contenido y las palabras que enlaza no tienen sentido. En un caso extremo, el habla se deteriora y resulta una mezcla sin sentido. (Carlson1996).

II. Insertar Tabla n° 1 Aquí

Tabla 1: Características de la Afasia de Wernicke (Adaptado de Benson y Ardila, 1996)

Lenguaje	Característica
Lenguaje conversacional	Fluente, parafásico
Comprensión del lenguaje	Anormal
Repetición	Anormal
Señalar	Anormal
Denominar	Anormal
Lectura: En voz alta	Relativamente normal a anormal
Comprensión	Relativamente normal a anormal
Escritura	Anormal

Por otro lado, es habitual encontrar en los pacientes que sufren AW alteraciones asociadas: cognitivas, neurológicas, alteraciones conductuales o neuropsiquiatrías (depresión, ansiedad, apatía, impulsividad, ira, desesperación) trastornos sensitivos en la visión (Masjuan et al. 2018) alteraciones que pueden ser más invalidantes que la misma AW, trastornando el entorno multidimensional (Educación, salud, ocupación, redes y cohesión social) de quien la padece.

Por todas estas alteraciones asociadas, el diagnóstico de la AW se establece primeramente identificado el daño neurológico luego del evento isquémico, sin embargo, este tipo de afasia puede llegar a confundirse con otros trastornos de índole psiquiátrico: cuadro de psicosis o delirio por la incoherencia del lenguaje o la apariencia de pensamiento desorganizado. Lo que establece la necesidad de realizar un examen integral exhaustivo: neurología, psiquiatría, psicología, neuropsicología, fonoaudiología entre otros. Por lo tanto, se debe iniciar con ciertos criterios diagnóstico para identificar el verdadero trastorno desde cada área en particular: Neurología: Tomografía Axial Computarizada (TAC), Resonancia Magnética (RM), con protocolos angiográficos CENBA (Sf); psicología y neuropsicología: exploración cognitiva estableciendo el perfil del paciente; fonoaudiología: exclusión de otros problemas de comunicación, puede detectar niveles más finos de disfunción y ayudar en la planificación del tratamiento y la evaluación del potencial de recuperación espontanea. (Diez, 2014) desde la psiquiatría la estabilidad de trastornos subyacentes a nivel mental.

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Teniendo en cuenta lo expuesto anteriormente el objetivo del presente estudio es describir el perfil cognitivo de un paciente con AW; seleccionando un protocolo de evaluación neurocognitiva, de tal forma que, el paciente pueda adaptarse fácilmente a la mayoría de estas pruebas, a través de las diferentes consignas sean visuales, auditivas y/o verbales, prevaleciendo las pruebas a nivel visual. Tal como se muestra en el cuadro N° 2 Pruebas aplicadas paciente con AW.

III. Método

Este estudio ha sido realizado a partir de un caso único (n=1), de tipo transversal, observacional. La recolección de los datos se realizó, a través de 10 sesiones, entre evaluación, neuropsicológica y de psicología en la consulta externa. Las tres sesiones de consulta con neuropsicología, se efectuaron con una intensidad de 45 minutos. Las sesiones por parte de psicología, se realizan después de finalizada la evaluación cognitiva, con el propósito de ajustar las habilidades conservadas con el estilo de vida del paciente y su familia. La intervención por esta área consideró cuatro componentes importantes son: evaluación emocional, estabilizar el estado emocional del paciente, la respuesta de competencias y la intervención familiar.

IV. Descripción Del Caso Clínico

Se trata de paciente masculino, adulto de 55 años, diestro, quien llega a consulta por remisión para evaluación neuropsicológica, a la Fundación Hospital Universitario Metropolitano FHUM, Barranquilla, Colombia, donde se le brindó evaluación neurocognitiva y psicológica al paciente. Se contó con la autorización del Comité de ética de la entidad participante y la firma del consentimiento informado por parte del paciente y su familiar. Según la historia de la enfermedad presenta antecedente de accidente isquémico asintomático causando atrofia cortical con predominancia en hemisferio izquierdo, con tres años de evolución. A través de estudios de imágenes diagnóstica TAC y RM, determinó el área de la lesión y manifestaciones clínicas, corroborando el diagnóstico de AW. Así mismo, los antecedentes personales y familiares se refiere presencia de Isquemia Cerebral. El familiar refiere presentación de cambios en el paciente a nivel comporta mental, con manifestaciones de agresividad e irritabilidad, dificultad en el lenguaje expresivo, olvidos constantes, déficit atencional. Síntomas que permitieron la remisión por parte de neurología a la evaluación de las diferentes esferas cognitivas; por lo que se ajustó un protocolo en la evaluación por neurocognitiva.

V. Instrumentos

Dicha evaluación se llevó a cabo con los siguientes instrumentos de recolección de datos:

a) Historia Clínica

Se realiza exploración y revisión de los datos específicos del paciente. Encontrando a nivel farmacológico tratamiento con Memantina 20 Mgs al día, Trileptal Cardioaspirina 600mg/por día. Lovastatina de 20 Mgs 1 dosis al medio día, mostrando buena evolución clínica.

b) Pruebas neurocognitivas

Desde neuropsicología se aplican las diferentes pruebas, relacionadas en la tabla N° 2 se visualiza en forma detallada todas aquellas escalas y test utilizados en la evaluación de las diferentes funciones cognitivas, objetivo de la prueba y diagnóstico.

c) Pruebas de evaluación emocional

Se evalúa familia y estado emocional a través Escala de Depresión de Yesavag, (Bacca, González y Uribe 2004).

Tabla 2: Instrumentos aplicados en la evaluación neuropsicológica

Prueba aplicada	Función que evalúa por procesos	Objetivo de la prueba	Diagnóstico
Escala: Cribado básico: Mini Mental State Examination MMSE	Orientación en tiempo y lugar	Evaluación del estado actual de las funciones cognitivas	Deterioro Cognitivo
	Memoria de fijación y Evocación		
	Atención y calculo		
Test de ejecución continua (CPT)	Atención Sostenida	Determinar el grado de afectación de la atención	Compromiso severo
Test de Benton			Promedio alto
TMT-A (57")	Atención focalizada		Compromiso leve
TMT-B (181")			
Test De Stroop			

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Escala: memoria de Wechsler (WMS)	Memoria	Evaluar los diferentes tipos de memoria y su grado de afectación	Memoria verbal Compromisos leves en
			Adecuada capacidad de almacenamiento de información verbal
			Memoria no verbal: dentro de lo esperado
			Memoria de trabajo: compromisos severos
Sub pruebas de la WMS, control mental	Memoria de trabajo		Compromiso severo
Sub pruebas Memoria lógica de la escala de Wechsler			
Sub pruebas dígitos de la escala de Wechsler			
Memoria auditiva verbal: ensayo diferido	Memoria inmediata – auditiva o ecoica		Compromiso leve
Evocación de Memoria de la Figura Geométrica Compleja De Rey Reproducción visual de la WMS	Memoria visual		Promedio esperado
Batería del Boston	Lenguaje	Evaluar lenguaje	Deterioro severo del lenguaje
Test de clasificación de tarjetas de Wisconsin		Evaluar flexibilidad cognitiva, capacidad de planeación, categorización y conceptualización	Compromiso severo
	Funciones Ejecutivas		
Prueba: Praxias Ideomotoras	Praxias: Ideomotoras - Viso constructiva	Evaluar las funciones de habilidades viso-espaciales:	Compromiso leve
Prueba: Praxias Ideacionales			Compromiso leve
Copia de la Figura Geométrica Compleja De Rey			Promedio esperado
Escala: Barthel para la valoración de actividades de la vida diaria (AVD).	Habilidades de la vida diaria	Evaluar las habilidades de la vida diaria	Capacidad de responder por sí mismo
Índice Katz			
Escala: Depresión de Yesevage	Estado emocional	Evaluar estado emocional del paciente.	Depresión severa

VI. Resultados

Los resultados nos muestran paciente orientado en el tiempo, espacio con respecto hacia sí mismo y hacia el entorno en que se desarrolló. Consiente, con buen patrón del sueño y apetito. Según los *sub-procesos atencionales*: presenta compromiso severo en la atención sostenida, lo que evidencia afectación en la concentración, sin embargo, logra mantener de forma aceptable la realización de tareas de rastreo viso-motor sencillas, con un tiempo aceptable en su ejecución. En cuanto a la atención focalizada presenta un compromiso leve, Esta alteración atencional conlleva a fatiga y la ineficiencia de cualquier actividad a realizar por parte del paciente.

Al evaluar la memoria, encontramos compromiso severo en la memoria de trabajo; reflejándose en la incapacidad de almacenamiento y el manejo temporal de la información, dificultad para recordar y responder a temas tratados a través de una conversación; de igual forma, ocasiona inconvenientes para aprender nuevos contenidos. Con respecto a la memoria inmediata auditiva o memoria ecoica, presenta un compromiso leve, observándose, poca retención a corto plazo de la información auditiva que recibe del entorno. En conjunto al tener alterado estos subprocesos de la memoria, se genera dificultades en otras esferas dimensionales donde interactúa el paciente con AW. Sin embargo, señalamos que la memoria visual se encuentra dentro del rango esperado.

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Siguiendo con la valoración, en el lenguaje, el resultado muestra, un lenguaje espontaneo fluido, a nivel articulatorio con una longitud de frases entre cinco o más palabras, prosodia conservada (acento, los tonos y la entonación), no obstante, se encuentra en el paciente, alteración en el contenido, con presencia de parafasia semánticas y fonética (hija por pija) caracterizado por ser extenso, con poca precisión en sus contenidos, anómico, presencia de circunloquios y algunos neologismos.

Igualmente, los aspectos gramaticales del lenguaje presentan dificultades, debido a la presencia de paragramatismo como son la omisión o la sustitución asistemicas de morfemas gramaticales y de palabras de contenido.

Por ejemplo, ante la pregunta ¿Cuántos hijos tiene? Responde el paciente

> *"mi hija Andrea, Guadalupe, es la ex Guadalupe duré 17 años ya la separación y todo eso, después me hicieron, fui a la universidad autónoma de Madrid hice el doctorado, después en agosto estaba yo y estaba Adriana estaba en Santa Marta empezamos estaba en cámara de comercio de Sta. Marta y empezamos todos los fines de semana, y ya".*

En la exploración del habla de conversación/exposición, se observa conservada la capacidad de responder ante ciertas preguntas de un contexto social tales como su estado actual, su nombre, entre otros, permitiendo la interacción social básica. No obstante, cuando las preguntas tienden a la complejidad, requiere de la participación de un tercero para lograr lo cometido, confluyendo aquí cambios emocionales en el paciente.

En cuanto a la denominación verbal por confrontación visual, está comprometida moderadamente, reconoce los objetos, pero no logra evocar su nombre, presencia de errores de tipo parafasico semántico. Utiliza como método compensatorio circunloquios y parafasias fonológicas en su discurso. En el momento de la evocación de contenidos, las claves fonológicas suelen resultar de mayor ayuda. Presentó preservadas las habilidades relacionadas con identificar y señalar dibujos de objetos, figuras geométricas, letras y números.

En relación a la compresión de instrucciones verbales, se encuentra parcialmente alterada, logra ejecutar ordenes cuando se emiten a través de frases sencillas, por el contrario, cuando se trata de órdenes por frases mucho más complejas se refleja compromiso moderado, requiriendo para la comprensión constantes repeticiones para su ejecución. Asociado a esto, se presentan inconvenientes y dificultades en la asimilación de estructuras lógico gramaticales complejas. En relación a la repetición de frases escritas esta se encuentra alterada con tendencia a la inversión y omisión de palabras.

Sobre, la capacidad de lectura de palabras y frases sencillas, se encuentran conservada, así como, la lectura con asociaciones de objetos, identificando alteraciones en la comprensión de textos escritos de complejidad media y alta. De la misma forma, se evidencian habilidades en el reconocimiento de letras en diferentes tipos, incluyendo mayúsculas y minúsculas, así como, en el reconocimiento de números; siguiendo el mismo orden, se encuentra conservada la capacidad para la discriminación y reconocimiento de las imágenes con presentación de lista múltiple de palabras.

Por lo que corresponde a la lectura de palabra en voz alta presenta compromiso en la articulación de la última silaba en algunas palabras, así como a la hora de la lectura de oraciones, con la aparición de fallas a nivel de sintaxis, presencia de parafasias semánticas y problemas articulatorios.

En la escritura se halló conservadas las habilidades para las construcciones gramaticales simples, las cuales suelen ser automatizadas o seriadas como es informar: nombre completo, dirección del domicilio, secuencia de números o el alfabeto, así mismo, se presenta conservada la copia imitativa con base a un modelo.

Otros hallazgos, en la valoración del lenguaje, evidencian alteraciones en la capacidad para repetir oraciones, en la lectura oral y en la escritura, dificultades al momento de la elección y reconocimiento de letras y números cuando son dictadas, alteraciones en la facilidad motora para la ejecución de movimientos que implican motricidad fina, que permiten la copia o construcción de una escritura fluida.

Para la denominación escrita de dibujos, se observan dificultades al momento de expresar de forma escrita la identificación de dichos dibujos, mostrando un desfase entre información gráfica y su significado a nivel escrito y dificultades para la representación de forma narrativa de una situación planteada. Este resultado plantea que, el paciente puede dibujarlo no explicarlo, lo que en este aparte de la prueba el paciente experimenta ansiedad.

Por otro lado, en la capacidad de comprensión, el paciente puede entender lo que se le dice; trata de expresarse, sin embargo; es difícil de entenderle por emplear otras palabras que no son coherentes, tipo neologismo. (Vallejo 2011) con lo que se está realizando. Lo que genera dificultades en la comunicación en su entorno social.

En relación a la praxias viso constructiva, se observa un adecuado desempeño en las funciones y habilidades viso- espaciales. en las Praxias Ideacionales y Praxias Ideo motoras, los resultados obtenidos están por debajo de lo esperado, presentándose alteraciones en la organización y ejecución de actividades práxica de mediana y alta complejidad, siendo consistente con procesos a nivel

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ejecutivo, para la organización, planeación y ejecución de actividades básicas que anteriormente estaban automatizadas, requiriendo de un gasto cognitivo importante para su ejecución. Ejemplo ejecutar actividades con instrumentos (clavar un clavo, cortar papel con una tijera, amarrarse los cordones entre otras).

Por otro lado, la evaluación de habilidades de la vida diaria, evidencian desempeño dentro de lo esperado, no siendo necesario la intervención de terceros para el desarrollo de actividades de autoayuda (peinarse, bañarse, cepillarse, abotonarse la camisa) sin embargo, en actividades de tipo instrumental, (responder el teléfono, prepararse sus propios alimentos, manejo de la medicación) ,se observa en el paciente dificultades moderadas para el desarrollo de estas actividades, las cuales requieren un mayor nivel de autonomía. por ser mucho más complejas. Involucrándose a la familia, como canalizador para la consecución de ellas, así mismo, con la familia se logra manejo de ideas irracionales, adherencia al tratamiento y pautas de manejo ante las habilidades cognitivas conservadas del paciente, como forma de lograr independencia y progreso en su estado emocional.

Considerando, los cambios emocionales del paciente se le aplica escala de Yesavage obteniendo un resultado de > 14 siendo esto, indicador de Depresión severa, escala que maneja una sensibilidad del 80%; especificidad del 100% es importante resaltar, que esta alteración emocional se desarrolla como una reacción reactiva de la nueva condición que enfrenta el paciente en su vida familiar, laboral y social. (Donoso 2002) Según la valoración del estado de conciencia del paciente, permitió observar estado de alerta, con ausencia de síntomas de anosognosia, y preocupación por los defectos lingüísticos

La remisión al área de psiquiatría deja por sentado el diagnostico de depresión, quien, ordena tratamiento con Fluoxetina 20 mg/día vía oral, por la mañana, con marcador de adherencia optimizada, y cambios significativos en su estado emocional.

VII. Discusión

Como se ha descrito anteriormente este estudio de caso, pretende demostrar la importancia de evaluar el perfil cognitivo de un paciente con afasia de Wernicke, perfil que, al ser identificado, facilita el diagnóstico cognitivo, teniendo en cuenta que desde las afasias se desprenden diferentes tipos y cada una de ellos puede presentar sintomatología diferente, lo que puede ocasionar controversia en el diagnostico o bien sea, confusión. (Parras, Benjumea y gallego 2017) existiendo la necesidad de dilucidar los síntomas que lo confirmen; no solo con la semejanza de la evaluación del lenguaje si no el resto de funciones cognitivas. Es importante destacar que, para establecer el diagnóstico de las afasias, se consideren ciertas variables, con el propósito de reducir las posibilidades de errar (González y Toledo 2007), inicialmente: determinar la naturaleza del trastorno a través de la identificación de las áreas cerebrales lesionadas y luego correlacionarlas con la presentación del déficit cognitivo esperado.

Siguiendo el mismo orden de ideas, el diagnóstico diferencial de las afasias desde la perspectiva de la neuropsicología clásica, se basa principalmente en evidenciar la *producción oral, la comprensión auditiva, la repetición y la denominación, y adicionalmente incluye la evaluación de la lectura y la escritura*, según González et al., 2007 , por lo tanto la evaluación neurocognitiva, es fundamental en la valoración del paciente con AW, dejando en evidencia que muchos pacientes con este diagnóstico pueden presentar otras alteraciones asociadas o bien determinar áreas conservadas relacionadas con el lenguaje, habilidad que generalmente se altera por el evento isquémico, específicamente, en el identificar y señalar dibujos, objetos, figuras geométricas, letras y números caso particular que se presenta en este estudio clínico; a diferencia, del estudio de (Masjuan, et al 2018) que señala que estas áreas deben estar dañada y consecuente a esto, la habilidad del paciente. De igual forma, estudio de Ardila, en el 2014 pág. 66 "Menciona la presencia de la anomia como un síntoma tradicional para el reconocimiento de partes del cuerpo, objetos externos y colores; así como también deficiencias para nombrar nombres de personas, seres vivos herramientas, entre otros."

Similar a otros estudios, se encuentran otras habilidades preservadas del paciente objeto de estudio, es la capacidad de lectura de palabras y frases sencillas; comenta (Ardila et al., 2007) que esta habilidad puede estar "relativamente normal a anormal; por otro lado, estudios de (González et al 2007) que, por lo general, la lectura y escritura se encuentran severamente alteradas. De la misma forma el mismo autor (Ardila et al., 2007) comenta que otras habilidades preservadas en el paciente, es el reconocimiento de letras en diferentes tipos, incluyendo mayúsculas y minúsculas, así como en el proceso de reconocimiento de números. Conservando la capacidad para la discriminación y reconocimiento de las imágenes, esto corroborado con la presentación de lista múltiple de palabras soportado en el Test De Boston.

> … "Los pacientes presentan una escritura fluida con letras bien formadas que se combinan para formar aparentes palabras. Sin embargo, las letras se combinan en una forma incorrecta. Las palabras correctas son escasas y abundan las combinaciones inteligibles la escritura es similar a la producción oral con abundantes paragrafias literales, verbales y neologismos". (p.64).

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Siguiendo con la atención es esperado encontrar en la AW, trastornos en la atención sostenida, y focalizada. Sin embargo, el resultado en esta área evidencia el logro del paciente en mantener de forma aceptable la realización de una tarea de rastreo viso-motor sencillo, con un tiempo admisible en su ejecución según su condición

clínica, ejemplo: los resultados obtenidos por el test TMT A. esta habilidad conservada permite la adopción de estrategias de rehabilitación que se refuerce y mejore; lo que facilita las actividades de la vida diaria; esto a su vez se relaciona con los resultados obtenidos en la prueba de Barthel "capacidad de responder por sí mismo."
Es importante reconocer, según Masjuan et al en el 2018 anoto:

Cuando las áreas del lenguaje se dañan por una lesión en el cerebro, puede ir acompañado de trastornos de memoria y de atención, La memoria, la atención y el lenguaje están íntimamente relacionados, funciones que se activan al hablar y son dependientes. Sin embargo, en el presente estudio, la memoria visual, se obtiene un resultado esperado. Cabe resaltar que la corteza visual es la encargada de recibir información de regiones subcorticales, como el cuerpo geniculado lateral. *(*Muñoz et al 2009*)* lo que no descarta mantener el seguimiento de estas áreas en particular.

Según el seguimiento al caso clínico, el estado emocional que experimento el paciente indica ser consciente de su trastorno y dificultades para comunicarse, entrando en un estado egodistónico. Opuesto a esto, estudios sugieren que no hay evidencia si los pacientes con AW están consiente de su déficit. Las evidencias sugieren que no están conscientes, pero, pueden reconocer sus errores si se les presenta una grabación. (Sánchez, García, Hernández, y Zarate 2003)

Es importante resaltar, que el pronóstico de este caso se acentúa de acuerdo a la rehabilitación satisfactoria que se le brinde a futuro al paciente, enfocada al lenguaje, área determinante y fundamental para la integración social; sumándose entre otros factores, el papel de la familia con su aceptación, su apoyo, cooperación y comprensión; por lo tanto, se hace necesario que la rehabilitación se inicie lo más pronto posible. (Álvarez y Bermúdez 2008) dependiendo esta intrusión del diagnóstico oportuno.

VIII. Conclusión

Identificar el perfil cognitivo es primordial en la AW, a través de la implementación y selección de pruebas que el paciente afásico pueda abordar de acuerdo a su estado actual, establecidas en la tabla N°2

La aplicación de la evaluación neurocognitiva, favorece la identificación de las habilidades conservadas, que podrían ser punto de partida para iniciar un programa de rehabilitación con todos aquellos profesionales que intervienen a pacientes con AW.

Sería importante para futuras intervenciones a personas con trastorno en el lenguaje por AW recomendar la intervención integral del paciente; permitiendo detectar otras complicaciones que pueden deteriorar la clínica del paciente y el rescate oportuno de las habilidades conservadas como compensación de otra deteriorada.

Conflicto de intereses: Los autores de este artículo declaran que no tienen ningún conflicto de intereses

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References Références Referencias

1. Ardila A., Roselli M. (2007) Neuropsicología clínica. México D. F. Editorial Manual Moderno, S. A Álvarez L., Bermúdez A. (2008) AFASIAS. Servicio de Logopedia y Foniatría. La Habana, Cuba. http://www.sld.cu/galerias/pdf/sitios/rehabilitacion-logo/afasias_1.pdf
2. Ardila A. (2014) Aphasia Handbook. Department of Communication Sciences and Disorders. Miami, Florida. USA. Recuperado febrero 5 de 2019 https://aalfredoardila.files.wordpress.com/2013/07/ardila-a-2014-aphasia-handbook-miami-fl-florida-international-university2.pdf
3. Bacca A., González A., Uribe A. (2004) Validación de la Escala de Depresión de Yesavage (versión reducida) en adultos mayores colombianos. *Red de Revistas Científicas de América Latina y el Caribe, España y Portugal.* 1(4), 52 - 63
4. Carlson N. R. (1996) Fundamentos de psicología fisiológica. Jorge A. Barrientos Silva. Tercera edición. México: Editorial PEARSON
5. Centro Endovascular neurológico Buenos Aires, CENBA (Sf) Que es un estudio Angiográfico. Ficha técnica, recuperada en febrero 07 de 2019. http://www.centroendovascular.com.ar/pdf/que_es_angiografia.pdf
6. Diez A. (2014) "Intervención Logopédica en un Sujeto con Afasia, tesis de pregrado, Universidad de Valladolid.

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7. Donoso A. (2002) Anosognosia en enfermedades cerebrales. *Revista chilena de neuro-psiquiatría*. 40(2), 69-79.
8. Fajardo L., Moya C. (2002) Fundamentos Neuropsicológicos Del Lenguaje. Salamanca, España. Editorial: Universidad De Salamanca. Ediciones Universidad De Salamanca.
9. González R., Hornauer A. (2014) Afasia: una perspectiva clínica. *Revista Hospital Clínico Universidad de Chile*. 2, 291 – 308.
10. González R., Toledo L. (2007) Diagnóstico diferencial de las afasias. Guía Docente Curso de Postgrado, Universidad de Chile, Hospital Universitario de Chile, Escuela de Fonoaudiología, Unidad de adulto. Santiago de chile. Recuperado en febrero de 2019http://repositorio.uchile.cl/bitstream/handle/2250/123326/Guia_Docente_Afasia_2007.pdf
11. Javed K., Wroten M. (2019) Neuroanatomía, Área de Wernicke. Stat Pearls Publishing LLC. Recuperado en marzo de 2019, https://www.ncbi.nlm.nih.gov/pubmed/30422593.
12. Martínez J. (2008) Definición de afasia. Afasiología: desarrollo histórico. *Revista Digital Universitaria*.9(12), 2-18.
13. Masjuan J., Montero P., Gil A., Peláez L., Marhuenda C., Tapiador N., Guiu J., Briales H. (2018) Alteraciones Asociadas a la Afasia. Edita: Asociación Ayuda Afasia.
14. Muñoz E., Blázquez J. L, Galpasoro N., González B., Lubrini G., Periañez J.A. Rios M., Sanchez I., Tirapu J., Zulaica A. (2009) Estimulación cognitiva y rehabilitación neuropsicológica. Primera edición. Barcelona, España. Editorial OUC.
15. Parra N., Benjumea J., Gallego S. (2017) Características neuropsicológicas y neurofisiológicas de los distintos tipos de Afasias. *Revista Chilena de Neuropsicología*. 12(2), 38-42 DOI: 10.5839/rcnp.2017.12.02.07.
16. Sánchez J. H., García S., Hernández M., González A., Zarate A. (2003) Afasia. Un trastorno del lenguaje de fisiopatología compleja y origen multifactorial. *Revista de especialidades Médico-quirúrgicas*. 8 (1), 20-27.
17. Tirapu J., Rios M., Maestú (2011) Manual De Neuropsicología. Segunda Edición. Sevilla, España: Editorial VIGUERA EDITORES.
18. Vallejo J. (2011) Introducción a la psicopatología y la psiquiatría. Séptima Edición. Barcelona, España: Editorial Elsevier España, S. L.

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Gilchris Disease of the Central Nervous System Mimicking Malignant Brain Neoplasm: A Rare and Fatal Complication of Blastomyces Dermatitidis

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Abstract- Blastomycosis or "Gilchrist disease" is a deep mycosis due to a dimorphic fungus: "Blastomyces Dermatitidis." It is a telluric fungus of the wooded areas of the Eastern North American continent, causing chronic granulomatous diseases, responsible for pulmonary manifestations due to the inhalation of its spores. Dissemination can lead to skin, bone, visceral, and even neurological signs that can be fatal.

We report the case of a 50-year-old African man who has been complaining for five days before admission of headaches and behavioral disorders. On examination, he had a frontal syndrome with idiopathic slowdown without motor or sensory deficit. The rest of hischeck up was normal. Cerebral MRI showed basal left with intense enhancement. The post-operative evolution was marked by the absence of awakening and the patient's death. Thepathological examination has concluded to cerebral blastomycosis.

Keywords: *blastomycosis; abcess; central nervous system.*

GJMR-A Classification: *NLMC Code: QV 80*



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Gilchris Disease of the Central Nervous System Mimicking Malignant Brain Neoplasm: A Rare and Fatal Complication of Blastomyces Dermatitidis

Mehdi Borni [α], Brahim Kammoun [σ], Haifa Mechergui [ρ] & Mohamed Zaher Boudawara [ω]

Abstract- Blastomycosis or "Gilchrist disease" is a deep mycosis due to a dimorphic fungus: "Blastomyces Dermatitidis." It is a telluric fungus of the wooded areas of the Eastern North American continent, causing chronic granulomatous diseases, responsible for pulmonary manifestations due to the inhalation of its spores. Dissemination can lead to skin, bone, visceral, and even neurological signs that can be fatal.

We report the case of a 50-year-old African man who has been complaining for five days before admission of headaches and behavioral disorders. On examination, he had a frontal syndrome with idiopathic slowdown without motor or sensory deficit. The rest of hischeck up was normal. Cerebral MRI showed basal left with intense enhancement. The post-operative evolution was marked by the absence of awakening and the patient's death. Thepathological examination has concluded to cerebral blastomycosis.

Extra-pulmonary blastomycosis remains a rare entity. The diagnosis is mainly based on examination of the CSF or the specimen after special staining. The mild or moderate forms are treated with itraconazole. In the case of severe, life-threatening infection, amphotericin B is required. The prognosis is unfortunately reserved for the price of several complications.

Keyswords: blastomycosis; abcess; central nervous system.

I. Introduction

Blastomycosis or "Gilchrist disease" is a deep mycosis due to a dimorphic fungus: "Blastomyces Dermatitidis." It is a telluric fungus of the wooded areas of the Eastern North American continent, causing chronic granulomatous diseases, responsible for pulmonary manifestations due to the inhalation of its spores. Dissemination can lead to skin, bone, visceral, and even neurological signs that can be fatal.

II. Patient and Observation

We report the case of a 50-year-old African man with no medical historyworking as shepherd, who has been complaining for five days before hospitalization of intensives headaches, behavioral disorders, and dizziness on standing. The patient did not smoke, drink, or use recreational drugs. On examination, he had a frontal syndrome with idiopathic ideomotor slowdown without motor or sensory deficit. The rest of hischeck up was normal.

Cerebral MRI (Figure 1) showed a left retro-orbital non-hemorrhagic front-basal lesion in iso signal T1, and hypo signal on T2 weighted image taking contrast in an intense and homogeneous way with a hypo diffusion signal and marked surrounding vasogenic edema on T2 Flair weighted image.

The patient developed unfortunately rapidly a consciousness deterioration and underwent quick resection of his lesion, which was hard, rubbery, and pedunculated on macroscopic examination.Microscopic analysis of the specimen showed granulomatous inflammation with yeast-forming fungi, consistent with «*B.D*».The postoperative evolution was marked by the absence of awakening and his death.

Pathological examination(Figure 2) showed, after coloration with Grocott's methenamine silver method, large broad-base and unipolar bidding yeast-like cells in favor of blastomycosis.

III. Discussion

Blastomycosis is a fungal infection of humans and other animals, notably dogs and occasionally cats, caused by the organism « Blastomyces dermatitidis (BD).» Endemic to portions of North America, blastomycosis can cause clinical symptoms similar to histoplasmosis [1].

The optimal habitat for « *Blastomyces* » colonization is wetland enriched with animal droppings and decaying vegetation. Inhalation is the most common route of transmission, followed by cutaneous inoculation via direct penetration which is much less common. Our patient used to have this type of contact with animals as he was a shepherd. « *BD* » is generally not transmitted from person to person, and therefore, is not considered contagious [2].

Clinical presentation is uncommun and may vary from subclinical infection to rapidly progressive

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dissemination and death. Constitutional symptoms such as disconfort, weight loss, and fatigue can be obviously seen [2]. Our patient was presented just for neurological disorders without others abnormalities.

The likelihood of infection with « *BD* » is equal among immunocompetent and immunosuppressed individuals unlike other opportunistic infections [2]. However,in people with compromised cellular immunity, infection is not more aggressive [2]. Lymphatic and hematogenous spread may ensue to potentially any organ [3]. After the lungs, other sites of disease involvement include skin, bone, genitourinary system, and the CNS, in order of decreasing frequency [2].

The preferred imaging modality in patients with suspected CNS infection is contrast-enhanced MRI. On MRI, pyogenic bacterial parenchymal abscesses typically will have a robustly enhancing peripheral rim of tissue that correlates with the host response and capsule formation. Centrally, pyogenic abscesses will display reduced diffusion correlating with purulent material, which is typically composed of cellular debris and inflammatory cells such as polymorphonuclear cells of the immune system [4]. However, the case presented here indicates a total and homogeneous lesion enhancement without central reduced diffusion.

In fact, the imaging characteristics of solitary parenchymal CNS blastomycosis infection can be hard to differentiate from other fungal entities, and the differential should include histoplasmosis and coccidioidomycosis.

CSF analysis will usually show pleocytosis with a neutrophilic or lymphocytic predominance [2]. If there is a diagnostic concern for blastomycosis, the detection of the «*B.D*» antigen rather than culture is useful.

On histopathology, tissue specimens show the host's response to the infection as an inflammatory reaction of polymorphonuclear leukocytes in a cluster of granulomas, usually of the non-caseating type [2]. Budding yeast cells with capsules will be seen, staining positive with Grocott-methenamine silver (GMS). Acid-fast stains can help distinguish « *B.D*» from *C. immitis*, as it will usually be negative in the latter and weakly positive in the former [2].

Orally givenItraconazoleis the best choice for most forms of the disease. Ketoconazolecan also be used. Cure rates are high, and the takin charge over months is usually well tolerated. Amphotericin B is considerably more toxic, and often reserved for immunocompromised patients who are seriously sick and those with central nervous system disease. Voriconazole has shown promise and continues to be used due to its ability to reach high concentrations within the CSF and brain tissue [5]. Most recently, a combination of surgical resection with antifungal therapy is considered the optimal management of solitary fungal brain abscesses [1,2].

IV. Conclusion

Extra-pulmonary blastomycosis remains a rare entity. The diagnosis is mainly based on examination of the CSF or the specimen after special staining. The mild or moderate forms are treated with itraconazole. In the case of severe, life-threatening infection, amphotericin B is required. The prognosis is unfortunately reserved for the price of several complications.

V. Conflicts of Interest

The authors declare no competing interest. There were any non-financial competing interests.

Figures

Figure 1: Brain MRI showing a left retro-orbital non-hemorrhagic front-basal lesion in iso signal T1 and hypo signal on T2 weighted image taking contrast in an intense and homogeneous way with a hypo diffusion signal and marked surrounding vasogenic edema on T2 Flair weighted image.

Figure 2: Pathological examination showing, after coloration with Grocott's methenamine silver method, granulomatous inflammation and large broad-base and unipolar bidding yeast-like cells.

References Références Referencias

1. Ryan K J; Ray C G, eds. (2004). Sherris Medical Microbiology (4th ed.). Mc Graw Hill. pp. 676–8.
2. Saccente M, Woods G L. Clinical and laboratory update on blastomycosis. Clin Microbiol Rev. 2010;23(2):367–81.
3. Fang W, Washington L, Kumar N. Imaging manifestations of blastomycosis: A pulmonary infection with potential dissemination. Radiographics. 2007;27(3):641–55.
4. Luthra G, Parihar A, Nath K, Jaiswal S, Prasad KN, Husain N, et al. Comparative evaluation of fungal, tubercular, and pyogenic brain abscesses with conventional and diffusion MR imaging and proton MR spectroscopy. AJNR Am J Neuroradiol. 2007; 28(7):1332–8.
5. Lutsar I, Roffey S, Troke P. Voriconazole concentrations in the cerebrospinal fluid and brain tissue of guinea pigs and immunocom promised patients. Clin Infect Dis. 2003;37(5):728–32.

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The Psychotherapy: Beyond Psychology

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Abstract- It is common for the psychologist to be homologated with the psychotherapist, as if the psychotherapeutic practice, which we can define as psychic treatment (Freud, 1890/1998, p. 115; see also Ávila, 1994; Ramírez, Lopera, Zuluaga, Ramírez, Henao and Carmona, 2015), was one of the modalities of application of psychology. Psychotherapy is then taken as just another occupational field of the psychologist, along with work in fields such as organizational, legal, educational, sports, social-community, etc. However, psychotherapeutic practice involves a dimension that is beyond psychology and demands another type of training, different from the one the psychologist undertakes to obtain his professional degree. This article intends, in the first place, to clarify what we understand by psychology and what by psychotherapy. Second, to examine the relationship of psychological science with the scientific method and with psychotherapy; and third, the conception of the scientific method as an art suitable for psychotherapy, and the importance of psychotherapist training.

Keywords: psychology, psychotherapy, asceticism, scientific art.

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The Psychotherapy: Beyond Psychology

La Psicoterapia: Más Allá De La Psicología

Juan Diego Lopera Echavarría

Abstract- It is common for the psychologist to be homologated with the psychotherapist, as if the psychotherapeutic practice, which we can define as psychic treatment (Freud, 1890/1998, p. 115; see also Ávila, 1994; Ramírez, Lopera, Zuluaga, Ramírez, Henao and Carmona, 2015), was one of the modalities of application of psychology. Psychotherapy is then taken as just another occupational field of the psychologist, along with work in fields such as organizational, legal, educational, sports, social-community, etc. However, psychotherapeutic practice involves a dimension that is beyond psychology and demands another type of training, different from the one the psychologist undertakes to obtain his professional degree. This article intends, in the first place, to clarify what we understand by psychology and what by psychotherapy. Second, to examine the relationship of psychological science with the scientific method and with psychotherapy; and third, the conception of the scientific method as an art suitable for psychotherapy, and the importance of psychotherapist training.

Keywords: psychology, psychotherapy, asceticism, scientific art.

Resumen- Es frecuente que se homologue al psicólogo con el psicoterapeuta, como si la práctica psicoterapéutica, que podemos definir como tratamiento psíquico (Freud, 1890/1998, p. 115; véase también Ávila, 1994; Ramírez, Lopera, Zuluaga, Ramírez, Henao y Carmona, 2015), fuese una de las modalidades de aplicación de la psicología. La psicoterapia es tomada entonces como un campo ocupacional más del psicólogo, al lado del trabajo en los campos organizacional, jurídico, educativo, deportivo, social-comunitario, etc. Sin embargo, la práctica psicoterapéutica comporta una dimensión que está más allá de la psicología y que exige al psicólogo otro tipo de formación distinto al que emprende para obtener su título profesional. Este artículo pretende, en primer lugar, aclarar qué entendemos por psicología y qué por psicoterapia. En segundo lugar, examinar la relación de la ciencia psicológica con el método científico y con la psicoterapia; y, en tercer lugar, la concepción del método científico como un arte, apropiado para la psicoterapia, y la importancia de la formación del psicoterapeuta.

Palabrasclave: psicología, psicoterapia, ascesis, arte científico.

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[1] Article result of the research Relation spsychology - psychoanalysis. Principal researcher: Carlos Arturo Ramírez; Co-researchers: Juan Diego Lopera, Marda Ucaris Zuluaga, Victoria Eugenia Ramírez, Carlos Mario Henao and Diana María Carmona. Research financed by the University of Antioquia (CODI).

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I. The Psychology

Usually, definitions of psychology are exclusive: they are made from a focus, tendency or private school, that ignores other perspectives. Thus, for example, defining psychology as a science of behavior (Watson, 1982/1916) leaves out all those psychologies that emphasize psychic structure (Freud, 1895, 1915, 1923a, 1923b / 1998; Dilthey, 1945; Maslow, 2010) or cognitive processes (Rivière, 1991). Freud (1923/1998, p. 247) defined his psychoanalytic psychology as *"Ciencia de lo inconcienteen el alma"*[3]; special conception that little or nothing had in common with the definitions of the psychology of his time, and much less with behaviorism.

Nowadays we find more comprehensive definitions that nonetheless seek to eliminate the concept of *psyché*, even though it is the affix before the word. Thus, for example, it is defined as "estudio del comportamiento en todas sus manifestaciones y contextos"[4] (Duro, 2003, p. 1), avoiding the reference to the psyche (soul) and preferring the concept of *behavior*, which would include, among other activities, the mental.

This has led some authors to consider that a general definition of psychology that includes all currents, perspectives and modalities is impossible and that, therefore, it is preferable to talk about *psychologies* and not *psychology* (Duque, Lasso and Orejuela, 2016), appealing in each case to its multiple ways of being defined. To consider the definition of what psychology consists in as impossible means to assume that every definition is a reduction, an attempt to joint to a symbolic field something that, in principle, is inarticulable.

However, this position could lead to a psychological activism without guidance or north, or to the idea that there is no comparison or possible contrast between investigations derived from each approach. Thus, behavioral theories would only be testable to each

[3] "science of the unconscious in the soul".

[4] "[…] study of behavior in all its manifestations and contexts".

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other; just like cognitive, humanistic and psychoanalytic theories also. We fall into the error that Popper (1997) calls *the myth of the common framework*: to suppose that each theory or each scientific discipline (or philosophical, psychoanalytic or other) would only be comparable if it is part of a common framework (paradigm, according to Kuhn, 2006). In other words, each one is considered irreducible and absolutely unique, which leads them to be radically different to each other. So then, in what corresponds to the knowledge that investigates the *psyché*, it is thought impossible to find relationships other than from difference, from opposition, and not from what is related. In our opinion, it is clear that between psychology and psychoanalysis there are many common aspects, confluences, agreements; but also differences, oppositions, divergences. A dialectical thought that tends to an *intermodification* of the discourses considers both the common and the different. Precisely this possibility of proposing a broad and inclusive definition (without ignoring the differences) opposes dogmatic or totalitarian positions and allows progress in the understanding of the discipline.

a) Logos

Let's start from a simple approach: the decomposition of the word into the Greek terms *psyché* and *logos*. The term *logos* has many meanings, the most general being *articulating principle* (Ramírez, 2012, Ens. 49, 50; Lopera, Manrique, Zuluaga and Ortiz, 2010); therefore, it is translated as *reason* (Pabón, 1967, pp. 371-372) that, in the human field, would include the primary reason (imaginary and usually unconscious) and the secondary reason (symbolic). Both forms of reason operate mixed (fractal logic) (Ramírez, 2012. Ens. 56, 233, 234, 235) and use linguistic signs as much as possible, since they attempt to articulate what in principle appears disjointed, poorly formalized or confusing. In this case we could refer to the *logos* as a *word*, resource that, when naming a field of phenomena, make it apprehensive for human reality.

Linguistic signs allow to build words, phrases, theories, propositions, systems, knowledge. There are many kinds of knowledge: myth, religion, poetry, philosophy, literature, science, among others. In the case of psychology, we seek to study the field of psychic phenomena in order to build a set of articulated knowledge about these phenomena. If the knowledge built by psychology derives from the repeated and rigorous application of the scientific method, we would say that it is scientific knowledge[5]; if in addition it fills the requirements of the scientific community of the current era, it would be science (Ramírez, 1991)[6]. This last circumstance, referred to the scientific community of an era, is what makes science historical, changing with the criteria that each community, according to its traditions, considers a priority. Now, a psychological current could be foreign to the scientific project (such as religious or philosophical psychology) or be part of that project, as most currents and schools of psychology have usually intended[7]. In sum, psychology can be understood as a scientific or non-scientific project (Ramírez et al., 2015). In the latter case, their formulations would derive from other diverse sources of the scientific method (divination, inspiration, revelation, literature), but that doesn't mean they would be disposable or uninteresting although there would be no way of knowing about their validity, a possibility that the scientific method does give. For this reason we privilege the latter, with which we can advance much more in knowledge. From the perspective of science, psychology would be then sought to be a *set of articulated and scientific knowledge about the psychic*.

b) Psyché

The term *psyché* (soul), as well as that of *logos*, has multiple meanings since classical antiquity. One of them, perhaps the most common among different thinkers, refers to the principle of life, encouragement, that is, what animates a being[8]. This principle was considered in various ways such as fire, air, breath of life, warm breath, spirit, number, first engine, movement. Among these elaborations—as in so many others— the classical philosophers stand out: Socrates, Plato and Aristotle, because they sought to systematize previous knowledge about the soul. In Socrates, we have his insistence on caring for the soul, his asceticism, as a result of the search for truth, which gives birth to a philosophical and psychological aspect that we call *ascetic*; in Plato (1988a), the soul as eternal and incorruptible; in Aristotle (1994), the soul as a specific form of the body.

With medieval thought and its privilege for religious thought the soul was considered a particle of God, understood as transcendent and immortal (Brett, 1972; Vanzago, 2011; Abbagnano, 1973). His ascetic

[5] It may seem a pleonasm but no: it tries to indicate that there is psychological knowledge that does not derive from the scientific method and, therefore, is not scientific. It can be literary, religious, metaphysical or other.

[6] With this, we are differentiating between scientific method (dialectical contrast path between theory and practice) and science, which would be one of the possible results of the application of the scientific method (Ramírez, 1991).

[7] Psychoanalysis thus differs from psychology in that it is a scientific method (as defined by Freud, 1923a/1998) and not a science; according to Foucault (2002), it would be a discipline that attempts to account for spirituality understood as care and self-awareness.

[8] Regarding this, see the interesting reflections that Gadamer (1996) makes about the term *psyché* and its relations with the German words *Leben* (life) and *Leib* (body).

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perspective is accentuated while the salvation of the soul is sought through a virtuous way of life based on spiritual exercises derived from antiquity (Hadot, 2006). It is thus coming to understand the soul (*psyché*) as something specifically human, although also an expression of a higher reality.

Modern scientific thought retains this human specificity, but mistrusts an immortal or transcendent soul and, in the footsteps of Bacon (Bacon (1984/1620; see also Brett, 1972) and in general English empiricists (Hume, 2001/1740), turns its gaze to the sensations, to what is supposed to give a firm basis for the knowledge of what has been called soul. At the end of the 19th century and at the beginning of the 20th century, within the scientific spirit of the time, different thinkers proposed different denominations for *psyché* or soul: immediate experience (Wundt, 1896/1982), psychic apparatus (Freud, 1923a, 1923b/1998), psychic life (Dilthey, 1945); or its replacement for behavior (Watson, 1913/1982); consciousness, among others.

Among these diverse definitions there are, however, common, constant aspects which have been gradually highlighted by different researchers and that seem indispensable to understand *psyché*: on the one hand, the cultural environment; and on the other, the human organism. But neither of these is constituted in its research center since culture has been a privileged field of sciences such as anthropology, sociology, history, among others; and the human organism of sciences such as biology, physiology, neuroanatomy, neurophysiology.

Psychology deals with what results from the encounter (conjugation) of those two orders. In this way, the *psyché* is considered as something that *emerges*[9] from the combinations between the hereditary constitutional of each individual and their ecological and cultural environment. Summarizing, the psychic is specifically human and arises from the way in which the human "puppy" (the infant with its inherited and acquired dispositions) incorporates culture (norms and fundamental laws). Therefore, we can say that the psychic, as a resulting structure, is the *incarnated culture* (Lopera et al., 2010). Some call this result personality, others call it character, consciousness, behavior, mind, subject, mood apparatus, behavior, self, unconscious, subjectivity, concrete man, etc.

Now, the human soul, from this perspective, derives from a process of culturalization, that can be understood as a *process of subjecting the individual to culture*, which psychology studies from the perspective of the subject (the individual) and not from what he holds, which would be the object of study of sociology.

The construction of a set of articulated knowledge about the incarnated culture (*psyché*) is usually carried out taking into account three aspects: 1) The way in which the soul works as an incarnated culture, that is, the structure, its elements and composition laws[10]; 2) The way in which that structure was constituted, that is, the evolutionary process, the structuring (socialization, learning, culturalization, Oedipus' crossing); and 3) The effects or expressions of the structure or soul; it refers to behavior, symptoms, everyday expressions, failed acts, dreams, symptomatic actions.

We have preferred to keep the term *psyché* and translate it to soul as an incarnated culture instead of the term *mind*, since the latter is more related to intellect and intelligence, and much less with other facets such as affective, emotional, pulsional (Ferrater Mora, 2004, p. 2364; see also Lopera, 2016). Even the Royal Spanish Academy (RAE) defines mind as "intellectual power of the soul." The word *psyché*, on the other hand, has been traditionally referred not only to the rational and intelligible, but also to life (Gadamer, 1996) and from ancient and medieval philosophy, to the vegetative, sensitive and rational (Aristotle, 1994; Tomás de Aquino, 2001); with the rational (thinking soul), with the irascible (combative soul) and with the concupiscent (desiring soul) (Plato, 1988b). The word mind derives from the Latin *mens* (intellect) or from the Greek *nous* (νουζ). This last word is defined as agent intellect. For Lopera and others (2010, pp. 125-126): "*Noûs* es entendido como algo intelectual, un *principio pensante*; mientras que *psyché* se ha concebido en ocasiones como una realidad orgánica, afectiva y emotiva, un *principio vivificante* (principio de vida)".[11] For Pabón (1967, p. 412) the νοῦς is "inteligencia, espíritu, mente, pensamiento, memoria […]; sagacidad, buen sentido, prudencia […]; proyecto, intención […]; razón, intelecto […]"[12]. The soul, as an incarnated culture, expresses both facets: the intellective, represented by culture as one of the expressions of the *logos* translated as reason; and the bodily, represented by that organism that receives and embodies culture becoming a body, that is, cultured meat. In other words, we claim (and preserve) the beautiful expression *psyché-logos*, *psychology,* to highlight the rich philosophical and scientific tradition that sustains it.

[9] The fact that *psyché* 'emerges' from the encounter of the individual with culture indicates that it is not an immediate reality; at most, only as genetic and constitutional dispositions that, however, are not enough to determine what is specifically human: cultural imprint is required.

[10] In this aspect we have all the studies on the basic and superior psychic processes; about personality structure and its types; about the primary and secondary processes (psychoanalysis); about systems 1 and 2 of thought (cognitive psychology); the information processing; the narrative structure; the linguistic components and their structures, among others.

[11] "*Noûs* is understood as something intellectual, a*thinking principle*; while *psyché* has sometimes been conceived as an organic, affective and emotional reality, a *life-giving principle* (life principle)."

[12]" […]intelligence, spirit, mind, thought, memory […]; sagacity, good sense, prudence […]; project, intention […]; reason, intellect […]".

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c) *The psychological science*

As we can deduce from the above considerations, *psychology is the study of the soul*. As a science, it is composed of an articulated set of theories that constitute the knowledge related to its field, and that derive from the application of various research methods (experimental, clinical, analytical, phenomenological). Any theory, whether referred to a single case (phenomenon) or, as is most usual, to a series of cases, must be based on the regularities, invariants and repetitions of these phenomena, to infer and construct the laws that govern them. In the case of psychological science this is evident: each theory or set of theories seeks to express the common, found in the addressed field of research.

This characteristic of theories serves as the basis for science to achieve its first and most important objective: *to know*, explain reality, corresponding to its investigative spirit and, consequently, *transform it*, which would be its second objective. Ramírez (2012, Ens. 24) proposes about this:

El primer objetivo de la ciencia, conocer la realidad (explicarla), está estrechamente relacionado con el segundo: transformarla, modificarla, actuar sobre ella. El científico no sólo quiere contemplar la realidad como el místico, el iluminado o el filósofo especulativo; él quiere actuar, moldearla conforme con su deseo, acomodarla a sus pretensiones: es una actitud *creativa (yang),* masculina, activa, dominadora. Quiere "mejorar" la naturaleza sin descartar la admiración por ella, transformarla según su designio (p. 60)[13].

This transformation of reality is carried out from the moment that scientific theories are built on it, but also, from a more active perspective, when *scientific practice* is carried out, that is, the application of specific methods and techniques from each science to a concrete reality.

II. The Psychotherapy

Drawing on the decomposition of the word *psycho-therapy* also, we would have *treatment* of the *psychic*, that is, *soul treatment* (Freud, 1998/1890). If the soul, as we previously considered, is what's characteristically human, that which results from the conjugation of the biological constitutional (human puppy) with the social institutions mediated by language (Lopera and Roldan, 1992, p. 6) and so with the incarnated culture; if this, we say, is the conception of the soul, then a treatment of the same consists of an *asceticism of the subject himself*, a purification of himself, a radical transformation that leads to a change in the way of facing existence.

It is not about intervening the symptoms exclusively since these are, among others, expressions of the soul; neither is it about solving a specific problem that makes a subject suffer; nor to intervene on certain aspects of a person's life and restrict or focus work to that field. An intervention work on a localized and specific problem in a subject is preferable to be called *consultancy* (Ramírez, 2012, Ens. 45) or *symptomatic psychotherapy* (Ramírez et al., 2015), since it is a treatment limited to a symptom or adefined problem; unlike psychotherapy itself that consists in a modification, a radical transformation of the subjective structure. We have called this *ascetic psychotherapy* (Ramírez et al., 2015).

In many moments of life, consultancy is essential and a very valuable help, especially for those who wish to solve an aspect about which they suffer or that represents a concern, doubt or worry[14], but do not want an exhaustive review of the way in which they face existence, of their way of being, which would definitely be the cause of their symptoms. It would be a work "restringido, localizado al conflicto específico (…) con la posibilidad de extenderlo a otros aspectos de su subjetividad, de su discurso existencial"[15] (Ramírez, 2012, Ens. 45, p. 102). From this perspective, there is no oppositional relationship between ascetic and symptomatic psychotherapy (or consultancy), but rather a continuity; or better, a gradualness, since a work on a focused aspect can be extended to other spheres of life.

Psychotherapy, from this conception of the treatment of the soul, from the search for a radical subjective asceticism (purification, transformation, self-care), derives from a whole philosophical tradition that we've already seen in the Greeks with their concern for the education of man from the perspective of *paideia* (Jaeger, 1962); in Socrates, for example, with his insistence on the construction of the truth through the maieutic dialogue and with his constant concerns about the *areté* (virtue): whether it can be taught or not (Plato, 1985, 1987); Foucault (2002, 2010), taking up this Greek tradition, speaks of *parrhesia* as that subject's commitment of making what he says to correspond to his feeling and his doing; and of the experience of truth as a modifying experience, transforming one's own subject. In *Technologies of the Self* (1990) Foucault presents an overview of what, in the history of mankind,

[13]" The first objective of science, know ingreality (explainingit), is closely related to the second: to transformit, modifyit, act on it. The scientist not only wants to contémplate reality as the mystic, the enlightened or the speculative philosopher; He wants to act, mold it according to his desire, accommodate it to hispretensions: itis a creative attitude (yang), masculine, active, dominant. He wants to "improve" nature without discarding admiration for it, transformit according to its design".

[14] An example is that of a young man who does not know which university program to choose and decides to attend consultancy to make an analyzed decision.

[15]" […] restricted, located to the specific conflict (…) with the possibility of extending it to other aspects of its subjectivity, of its existential discourse".

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has been considered fundamental for the cultivation of the soul, both from the self-awareness point of view and from the selfcare perspective. Pierre Hadot (1998, 2006, 2009, 2010) shows ancient philosophy as a discourse but, fundamentally, as a way of life, in which caring for oneself through spiritual exercises was fundamental to the achievement of a good life (*eudamonia*).

A subject decides a treatment of the soul when, fundamentally, he doesn't put up with the suffering generated by his way of being and facing existence. He undergoes a transformation of himself, an asceticism, driven by suffering and the desire of it being reduced. Psychotherapy seeks, through subjective transformation, a modulation or moderation of symptoms (rather than their elimination) with the purpose that the subject builds his own desire and takes charge of his destiny, taking responsibility. We then define psychotherapy as:

> […] *tratamiento psíquico —desde y hacia lo psíquico— con el propósito de moderar el sufrimiento o de transmitir una actitud que permita enfrentar la existencia.* El énfasis en la circunstancia de que se trata *desde y hacia lo psíquico* busca mostrar que, entre los medios utilizados y considerados esenciales para los efectos que se pretenden, se encuentran la palabra y demás expresiones simbólicas. Procedimientos que preferentemente utilizan otras vías como los masajes, la meditación, la relajación, la gimnasia, los aromas, entre otros, y que relegan a un papel secundario el uso de la palabra, más correctamente pueden llamarse *terapias,* no psicoterapias (Ramírez y otros, 2015, p. 199)[16].

Now, in psychotherapeutic work the patient can build or discover that, beyond his desire of moderating suffering, there is a more fundamental and prior wish: *his desire to know*, to be aware of himself and his environment (Ramírez, 2012, Ens. 71, p. 146). In this case, psychotherapy would not be enough. It would require a work based on the *Freudian device*, in which it is sought to take the analysis of the discourse to the last consequences. From this perspective, the asceticism or modification of oneself is not motivated by the desire to mode rate suffering but by the desire to know, which leads much further in this way towards accountability and subjective singularization (Ramírez, 2012, Ens 16).

III. The Psychotherapy: Beyond Psychology

To the extent that psychotherapy points to a treatment of the soul of a subject to a radical modification or asceticism of itself, it must fundamentally attend to the *singularity* of that subject, that is, to what characterizes him as such and, to a lesser extent, what is common with others. In order to intervene, it must be based on the subject's discourse, and not on psychological theories that, as previously stated, are of general nature. When it is intended to direct a psychotherapy from psychology (that is: from the articulated set of knowledge about the psychic), the singularity of the subject is not being addressed as an essential way for him to build his own desire and take charge of his destiny, but he is being accommodated in a generality; in the worst case, he is being *standardized*, addressing to defined norms and, instead of tending to his own freedom, he is being subjected to a new domination in addition to that derived from ignorance of himself and his not-analyzed prejudices. This is the reason why psychotherapy is beyond psychology (Ramírez, 2012, Ens. 25), which leads, at the same time, to a commitment to freedom.

The above considerations do not mean we must repudiate and reject psychology and all the acquired scientific knowledge with the excuse that they alienate the subject or subject him to a subtle form of domination (Lopera, 2002, 2004a). This perspective, according to some nihilistic expressions of postmodernism, is wrong although it is recognized that in some cases psychology becomes an instrument at the service of domination (Braunstein, 1979; Deleule, 1983; Politzer, 1969). The fact that psychotherapy is beyond psychology does not imply that theories are therefore negligible and that general knowledge (or great stories) should be destroyed. Quite the opposite. Psychology as a science fulfills a great function: to know and explain the reality of which it deals. It also contributes, in this way, to man's desire to know, to his epistemic pulsion, the foundation of science.

If we no longer refer to psychological science but to *psychological practice*, that is, to the application of psychological methods to specific cases —the social-community, educational, legal, sports, consultancy, etc.— we see that general knowledge plays a vital role but fundamentally depends on the position of the psychologist, that is, on the attitude he adopts towards it. The use of theory in psychological practice depends on two elements: 1) the way in which the psychologist

[16] "[...]*psychic treatment — from and towards the psychic — with the purpose of moderating suffering or transmitting an attitude that allows us to face existence.* The emphasis on the circumstance *from and towards the psychic* seeks to show that, among the means used and considered essential for the intended effects, are the word and other symbolic expressions. Procedures that preferably use other routes such as massages, meditation, relaxation, gymnastics, fragrances, among others, and that relegate using words to a secondary role can be called more correctly *therapies*, not psychotherapies".

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incorporates the theory; 2) the attitude of learned ignorance[17] that he assumes in his practice.

As for the first aspect there are also two ways of assimilating theory: in an uncritical way, simply assuming it without examining it and without subjecting it to a rigorous analysis in the company of others, which makes it part of its set of prejudices; or it can be incorporated from an exhaustive review, mediated by an analysis of it through *understanding*, *criticizing* and *contrasting* to finally come to *comprehend* (incorporate) (Ramírez, 1991), so that the theory will no longer be the same, since it assumes it as personal, part of its way of being. In this second perspective, psychological theory can be recreated by the psychologist who seeks to express it in consensual language so that other colleagues can understand it and, recurrently, criticize it as a path for the advance of psychological science. Theory incorporated from this second way transforms the psychologist, creates an attitude of openness to other positions and speeches, dissimilar or similar to his.

Learned ignorance corresponds to the attitude of the psychologist, in each of the fields of his psychological practice, of *recognition of knowledge* of those subjects with whom he works, with which his own knowledge is put on hold[18] operating only from what's incorporated, which is no longer theory as such, but a way of being, attitude, method. If his knowledge has been incorporated in an uncritical way it will influence as prejudices of the work generating obstacles and, in the worst case, unsuspected alienations, submissions and standardizations; if it has been incorporated through a method of analysis (understand, criticize, contrast and incorporate) it will operate precisely as an open attitude of listening, criticism and contrast[19]. From this last position can be privileged, in any type of psychological practice, the singularity of the subject (individual or in group), his own desire; for Ramírez (2012, Ens. 23):

La psicología puede usarse para conocer las regularidades e invarianzas de los sujetos, e intentar adaptarlos a un patrón general (en su doble sentido); pero también el conocimiento de dichas leyes puede ser invaluable cuando se quiere privilegiar el deseo singular de un sujeto (p. 59)[20].

Then, Learned ignorance is not reached by ignoring, in an indifferent way, the theory, as some will think when they go firmly against diagnosis—to cite a single example among many, which is also expressed in those who want to destroy science and all "great stories"—. Rather, learned ignorance can be assumed when an effort is made to examine, with extreme rigor and with an analytical disposition, the psychological theory that is studied, when it's delved into it, when it is recreated and contrasted with other theories, disciplines and knowledge; in summary, when it is incorporated through understanding, criticizing and contrasting leading that theory to professional and existential practice. The use of diagnosis will depend on the position assumed by the psychologist, as well as the use of any general theory.

For the attitude of learned ignorance there are two moments: one in which the psychologist, without the urge to intervene —since he is not in the specific situation in his practice— takes the theory into account and incorporates it through the analytical method (understand, criticize, contrast and incorporate); and another moment in which, upon a specific case, the psychologist suspends the theory intervening only from his listening, his analysis, his criticism and his contrast. In both cases, although different, his attitude must be of humility and recognition of his lack of knowledge: learned ignorance (Ramírez, 2012; Ramírez et al., 2015; Ramírez et al., 2017; Ramírez et al., 2019; López, 1995).

IV. Pyschotherapy: A Scientific Art

To propose that psychotherapy is not a science, that it does not derive from a psychological theory but from an attitude and that, therefore, is beyond psychology, can lead to a misunderstanding expressed in the idea of some that it is not possible to know which achievements, results and effects the psychotherapeutic work has. As in a drifting trip, subject to the chance that a favorable or harmful result was obtained. There would be no guide, no torch that would light the taken path in psychotherapy. This un-blaming attitude leads to all kinds of abuse being committed and to avoid any ethical commitment. Contrary to what one might think,

[17] Learned ignorance is a concept that derives from a long philosophical tradition: from Socrates with his phrase *I know that I know nothing* (Plato, *Apology*, 1985); with Nicholas of Cusa (1440/1985) in his book *On learned ignorance,* from the perspective of the relationship with God; with Montaigne (1580/1985) and his art of conferring; with Descartes (1637/2008) and its debugging of prejudices; with Bacon (1620/1984) and his elimination of idols and anticipations in the knowledge of nature; with Freud (1912/1998) and his floating attention or psychoanalytic listening; with Lacan (1989) and his concept of dismissal of the Subject Supposed to Know; with Gadamer (1992, 1993) and his theory about precomprehension in philosophical hermeneutics; with Foucault (2007) and his genealogical archeology; with Popper (2001) and his knowledge of ignorance; with Rancière (2003) and his proposal of the ignorant teacher.

[18] In psychoanalysis the concept of learned ignorance has a central place. Jacques Lacan (1981, p. 404) takes it back from Nicholas of Cusa (1440/1985) to think about the position of the analyst in the cure, the analysis and management of the transfer, as well as in the transmission, study and approach of psychoanalysis as such.

[19] In many cases he will do it from his intuition, but an analyzed one. For the concept of intuition in science see Hogarth, 2002; and for intuition in psychology and psychoanalysis, see: Ramírez, 2012, Ens. 231, 232 and 233; Lopera, 2009, 2004b; Lopera, Echeverri and Goenaga, 2019; for the concept of intuition in decision making, see Manrique, 2019; Builes, 2017.

[20] "Psychology can be used to know the regularities and invariances of the subjects and to try to adapt them to a general pattern (in its double sense); but also the knowledge of these laws can be invaluable when it is wanted to privilege the singular desire of a subject".

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although psychotherapy is not performed from a science, it is carried out from a *scientific attitude* which dialectically contrasts theory and practice. With this we establish a difference between science and the scientific method.

Science, as we expressed before, is an articulated set of articulated knowledge that derives from the systematic application of the scientific method and that meets the requirements of the scientific community of an era (Ramírez, 1991). Science, as a set of theories, consists of sedimentation and articulation of diverse knowledge in knowledge, in a coherent and consistent manner.

The scientific method, on the other hand, is the path taken to reach the construction of science. It seeks to contrast the theory with practice and vice versa, in a constant dialogue that modifies them both. This particularity of the scientific method of establishing a constant dialogue between theory and practice transforms its application, to a large extent, into an *art*, where creativity, intuition and ingenuity are played (Ramírez, 2012, Ens. 231, 232 and 233; Lopera, 2009, 2004b; Lopera, Echeverri and Goenaga, 2019) and not, as occurs from some dominant positions in the scientific community (as a new, unrecognized version of positivism), into a set of standardized steps and regulated to be followed—as usually appears in the manuals on methodology of scientific research available for all— from which a new truth would be supposedly obtained. This second conception of the scientific method, exclusively algorithmic and prescriptive, leads precisely to "research" without creativity, without ingenuity, without invention and without transformation of the researcher, that is, without *scientific spirit*. On the contrary, the conception of the scientific method that highlights its dimension of art (or craftsmanship) enables intuition and creativity within a range given by the validity criteria of any scientific method: consistency and efficacy (Ramírez, 1991; Ramírez et al., 2017, 2019); it also allows us to understand that from the systematic application of this scientific attitude many results derive.One of them is science, but it is not the only one[21].

Psychotherapy is based on an attitude (learned ignorance), not a theory. This attitude is precisely that of the scientific method understood as art, in which there is a guide given precisely by the *patient's theory* (his speech) and his *practice* (his existential doing). This relationship between art and learned ignorance in the field of psychotherapy was also proposed by Bruno Bettelheim, who Rosenfeld tells us that, with the expression *the art of the obvious,* "aludía al arte de ver claramente aquello que está ahí para ser visto, en vez de superponerle nuestras propias ideas previas y nuestros prejuicios"[22](Bettelheim and Rosenfeld, 1994, p. 239).

The psychotherapist, based on the attitude of learned ignorance, relies on the patient's speech for the analysis he wishes to perform in the process of transformation of the subject. This analysis of the patient's speech, based on listening —basis of understanding, criticizing and contrasting—draws on a *consistency* test (Ramírez, 1991), that is, a comparison between different parts of the patient's speech in order to find contradictions, discrepancies, gaps, hidden senses, etc., that will allow him to intervene so that the patient gradually gains knowledge about himself; the consistency will also be applied, as a consequence of the above, to interventions themselves: if they derive from the patient's speech, if they are congruent with it, etc.

It also draws upon an *efficacy* test (Ramírez, 1991) whereby the psychotherapist addresses the effects that are produced by the interpretations (his and the patient's) in the discourse and in the existence of the latter: new memories, creation of meanings, changes in the way of relating to others, attitude of accountability to oneself, progress in the analysis, changes in the way of behaving; moderation of suffering, clarification of problems and concerns. Consistency is theoretical and efficacy is practical. Both interrelate in a mutual dialogue that will transform, at the same time, the theory and practice of the patient: feeling, believing, thinking, saying, expressing and doing will gradually become congruent with each other (Ramírez et al., 2017, p. 53). Thus, the patient, rather than incorporating a theory or doctrine (with which he would alienate), incorporates an attitude of listening, of analysis, of criticism, of contrast; scientific attitude that will allow him to face, for himself and according to his subjective desire, his own existence.

Psychotherapy, derived from the scientific method and not from psychological science, can, however, contribute to the latter's progress. The psychotherapeutic experience leaves the psychotherapist with a knowledge that he may partly formalize in theories and, subsequently, submit to the methods of psychology to proceed with its corroboration

[21] The scientific method, from this broad conception, has been used for different purposes since the earliest antiquity: as maieutics for the search for truth; as sophistry for persuasion; as rhetoric to find power; as reflection and meditation (stoic, epicurean, cynical, skeptical) for the sake of living; as religious exercises for the salvation of the soul; as a methodical doubt (Descartes, 2008) to find certainty; as genealogical archeology (Foucault, 2007) for the constitution of oneself as subjects; as a psychoanalytic method, to make the unconscious conscious; as a communicative action (Habermas, 1987) for a vital self-reflection that leads to disalienation; as an experimental method for the construction of general theories by controlling variables; as a clinical method for the study of a case in extension and depth, among other possibilities.

[22] "[…]alluded to the art of clearly seeing what is there to be seen instead of superimposing our own previous ideas and our prejudices".

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or falsification. It is not as if he were constructing theories when listening to his patients, but after the end of the session or, preferably, after closing a case. This was Freud's experience: a large sector of his psychoanalytic conceptualizations derives from the experiences obtained in his analytical work with his analyzers.

It remains to be noted that the psychotherapist must have incorporated (or be in the process of incorporating) that scientific attitude, that art of listening well, of analyzing well, of intervening well, in order to direct the psychotherapeutic work of others. It is therefore appropriate to have trained as a psychotherapist through personal experiences as a patient in a psychotherapy or in a psychoanalysis, in addition to constantly work on the psychological (general) theory and the clinical and psychotherapeutic theory that others have developed and contrast it with his own and the one he elaborates. He will hardly be able to assume this de-prejudiced attitude if he has not himself undergone a purge of prejudices in a psychotherapy in which he can talk about his life, his entanglements, his problems, his history, his traumas, his primordial signifiers. In summary, he must live, before authorizing himself as a psychotherapist, a process of subjective asceticism, as we have proposed in this article.

References Références Referencias

1. Abbagnano, Nicola. (1973). *Historia de la filosofía,* vol. 1: Filosofía antigua, filosofía patrística, filosofía escolástica. Barcelona: Montaner y Simón.
2. Aquino, Tomás de. (2001) *Suma de teología.* Madrid: Biblioteca de Autores Cristianos.
3. Aristóteles. (1994). *Acerca del alma.* Madrid: Gredos.
4. Ávila, A. (1994). *Manual de técnicas de psicoterapia. Un enfoque psicoanalítico.* Madrid: Siglo XXI.
5. Bacon, Francis. (1984). *Novumorganum.* Barcelona: Orbis. (Trabajo original publicado en 1620).
6. Bettelheim, Bruno y Rosenfeld, Alvin. (1994). *El arte de lo obvio.* Barcelona: Crítica.
7. Braunstein, Nestor. (1979). *Psicología, ideología y ciencia.* México: Siglo XXI.
8. Brett, George. (1972). *Historia de la psicología.* Buenos Aires: Paidós.
9. Builes, Isabela. (2017). *Aspectos lógicos del pensamiento intuitivo y sus implicaciones en la toma de decisiones.* Tesis de grado para optar al título de Magister en Estudios Humanísticos. Medellín: Universidad EAFIT.
10. Cusa, Nicolás de. (1985). *La docta ignorancia.* Barcelona: Orbis. (Trabajo original publicado en 1440).
11. Deleule, Didier. (1983). *La psicología: mito científico.* Barcelona: Anagrama.
12. Dilthey, Wilhelm. (1945). *Psicología y teoría del conocimiento.* México: Fondo de Cultura Económica.
13. Descartes, René. (2008). *Discurso del método y Meditaciones metafísicas.* Madrid: Espasa-Calpe. (Trabajo original publicado en 1637).
14. Duque, Juan; Lasso, Patricia y Orejuela, Johnny. (2016). *Fundamentos epistemológicos de la psicología con énfasis en psicología transpersonal.* Cali: Editoral Bonaventuriana.
15. Duro, Juan. (2003). "Psicología clínica y psiquiatría". En: *Papeles del Psicólogo,* 2003. Vol. 24, nº 85, pp. 1-10. Consejo General de Colegios Oficiales de Psicólogos, Madrid, España.
16. Ferrater Mora, José. (2004). *Diccionario de filosofía.* (4 tomos). Barcelona: Ariel.
17. Foucault, Michel. (1990). *Tecnologías del yo.* Barcelona: Paidós.
18. Foucault, Michel. (2002). *Hermenéutica del sujeto*. México: Fondo de Cultura Económica.
19. Foucault, Michel. (2007). *Arqueología del saber (1969).* México: Siglo XXI.
20. Foucault, Michel. (2010). *El coraje de la verdad.* Buenos Aires: Fondo de Cultura Económica.
21. Freud, Sigmund. (1998). Tratamiento psíquico (tratamiento del alma). En J. L. Etcheverry (Traduc.). *Obras completas: Sigmund Freud* (Vol. 1, pp. 11-132). Buenos Aires: Amorrortu. (Trabajo original publicado en 1890).
22. Freud, Sigmund. (1998). Interpretación de los sueños. En J. L. Etcheverry (Traduc.). *Obras completas: Sigmund Freud* (Vol. 5). Buenos Aires: Amorrortu. (Trabajo original publicado en 1895).
23. Freud, S. (1998). Consejos al médico sobre el tratamiento psicoanalítico y Sobre la iniciación del tratamiento. En J. L. Etcheverry (Traduc.). *Obras completas: Sigmund Freud* (Vol. 12, pp. 107-120). Buenos Aires: Amorrortu. (Trabajo original publicado en 1912).
24. Freud, Sigmund. (1998). La represión. En J. L. Etcheverry (Traduc.). *Obras completas: Sigmund Freud* (Vol. 14, pp. 135-152). Buenos Aires: Amorrortu. (Trabajo original publicado en 1915).
25. Freud, S. (1998). Dos artículos para enciclopedia: «psicoanálisis» y «teoría de la libido». En J. L. Etcheverry (Traduc.). *Obras completas: Sigmund Freud* (Vol. 18, pp. 227-254). Buenos Aires: Amorrortu (Trabajo original publicado en 1923a).
26. Freud, S. (1998). El yo y el ello. En J. L. Etcheverry (Traduc.). *Obras completas: Sigmund Freud* (Vol. 19, pp. 1-66). Buenos Aires: Amorrortu (Trabajo original publicado en 1923b).
27. Gadamer, Hans-Georg. (1992). *Verdad y método II.* Salamanca: Sígueme.
28. Gadamer, Hans-Georg. (1993). *Verdad y método I.* Salamanca: Sígueme.

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29. Gadamer, Hans-Georg. (1996). "Vida y alma". En: *El estado oculto de la salud.* Barcelona: Gedisa. Pp. 155-165.
30. Habermas, Jürgen. (1987). *Teoría de la acción comunicativa. Tomos I y II.* Madrid: Taurus.
31. Hadot, Pierre. (1998). *¿Qué es la filosofía antigua?* México D.F.: Fondo de Cultura Económica.
32. Hadot, Pierre. (2006). *Ejercicios espirituales y filosofía antigua.* Madrid: Siruela.
33. Hadot, Pierre. (2009). *La filosofía como forma de vida. Conversaciones con Jeannie Carlier y Arnold I. Davidson.* Barcelona: Alpha Decay.
34. Hadot, Pierre. (2010). *No te olvides de vivir. Goethe y la tradición de los ejercicios espirituales.* Madrid: Siruela.
35. Hogarth, Robin. (2002). *Educar la intuición.* Barcelona: Paidós.
36. Hume, David. (2001). *Tratado sobre la naturaleza humana.* Buenos Aires: Edición electrónica Diputación de Albacete www.dipualba.es/publicaciones Traducción de Vicente Viqueira. (Trabajo original publicado en 1740).
37. Jaeger, Werner. (1962). *Paideia: los ideales de la cultura griega.* México: Fondo de Cultura Económica.
38. Kuhn, Thomas. (2006). *Estructura de las revoluciones científicas.* México: Fondo de Cultura Económica.
39. Lacan, Jacques. (1981). *El seminario de Jacques Lacan. Libro 1. Los escritos técnicos de Freud. 1953-1954.*Barcelona: Paidós.
40. Lacan, Jacques. (1989). *El seminario de Jacques Lacan. Libro 11. Los cuatro conceptos fundamentales del psicoanálisis. 1964.* Texto establecido por Jacuqes-Alain Miller. Buenos Aires: Paidós.
41. Lopera, Juan. (2002). "Psicología y modernidad". En: *Revista Científica.* Vol. 1, Nº. 1, 2002. Bucaramanga: Universidad Pontificia Bolivariana, Seccional Bucaramanga, pp. 82-90.
42. Lopera, Juan. (2004a). "Psicología y libertad". En: *Vida y salud.* N°. 2, 2004, Neiva: Universidad Surcolombiana, pp. 43-59.
43. Lopera, Juan. (2004b). "La intuición en la psicología". Conferencia 11° Congreso Colombiano de Psicología, abril de 2004.
44. Lopera, Juan. (2009). "La intuición en la psicología y en la psicoterapia". En: *Revista de Psicología Universidad de Antioquia,* 1, N°. 1, 2009, pp. 85-93.
45. Lopera, Juan. (2016). *Sabiduría práctica y salud psíquica.* Bogotá: San Pablo.
46. Lopera, Juan; y Roldán, M. (1992). *Sobre una práctica psicológica basada en el método analítico.* Monografía presentada para optar al título de psicólogo. Medellín: Departamento de Psicología, Universidad de Antioquia.
47. Lopera, Juan; Manrique, Horacio; Zuluaga, Marda y Ortiz, Jennifer. (2010). *El objeto de la psicología: el alma como cultura encarnada.* Medellín: Editorial Universidad de Antioquia.
48. Lopera, Juan; Echeverri, J. y Goenaga, J. (2019). *De la sabiduría práctica y la decisión en incertidumbre.* Bogotá: Aula de Humanidades.
49. López, Adolfo. (1995). *La posición del analítico en la mayéutica socrática.* Monografía para optar al título de psicólogo. Medellín: Departamento de Psicología, Universidad de Antioquia.
50. Manrique, Horacio. (2019). *La toma de decisiones: entre la intuición y la deliberación.* Medellín: Fondo Editorial Eafit.
51. Maslow, Abraham. (2010). *La amplitud de la naturaleza humana.* México, Trillas.
52. Montaigne, Michel. (1985). *Ensayos. Vol. I.* Barcelona: Orbis. (Trabajo original publicado en 1580).
53. Pabón, José. (1967). *Diccionario Manual Griego.* Griego clásico-español. Madrid: Vox.
54. Popper, Karl. (1997). *El mito del marco común: en defensa de la ciencia y la racionalidad.* Barcelona: Paidós.
55. Popper, Karl. (2001). "El conocimiento de la ignorancia". *Revista de la Universidad Bolivariana.* Vol. 1, N°. 1, 2001. Universidad Bolivariana. Santiago de Chile, pp. 1-5.
56. Platón. (1985a). "Apología". En: *Diálogos I.* Madrid: Gredos.
57. Platón. (1985b). "Protágoras". En: *Diálogos I.* Madrid: Gredos.
58. Platón. (1987). "Menón". En: *Diálogos II.* Madrid: Gredos.
59. Platón. (1988a). "Fedón". En: *Diálogos III.* Madrid: Gredos.
60. Platón. (1988b). "Fedro". En: *Diálogos III.* Madrid: Gredos.
61. Politzer, George. (1969). *Crítica de los fundamentos de la psicología.* Barcelona: Ediciones Martínez Roca.
62. Ramírez, Carlos (1991) "El método científico en el psicoanálisis". En: *Revista Universidad de Antioquia.* Volumen LX / Número 224. Abril/Junio 1991. Universidad de Antioquia, Medellín, pp. 35-41.
63. Ramírez, Carlos. (2012). *La vida como un juego existencial: ensayitos.* Medellín: Fondo Editorial Eafit.

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64. Ramírez, C., Lopera, J., Zuluaga, M., Ramírez, E., Henao, C., y Carmona, D. (2015). *Relaciones psicología-psicoanálisis.* Bogotá: San Pablo.
65. Ramírez, Carlos; Lopera, Juan; Zuluaga, Marda y Ortiz, Jennifer. (2017). *El método analítico. Vol. I Fundamentación teórica.* Bogotá: San Pablo.
66. Ramírez, Carlos; Lopera, Juan; Zuluaga, Marda y Ortiz, Jennifer. (2019). *El método analítico., Vol. II. Aplicaciones.* Bogotá: San Pablo.
67. Rancière, Jacques. (2003). *El maestro ignorante.* Barcelona: Laertes.
68. Rivière, Ángel. (1991). "Orígenes históricos de la psicología cognitiva: paradigma simbólico y procesamiento de la información". En: *Anuario de Psicología*, 1991, N° 51, 129-155. Facultat de Psicología, Universitat de Barcelona.
69. Vanzago, Luca. (2011). *Breve historia del alma.* Buenos Aires: Fondo de Cultura Económica.
70. Watson, John. (1982). "La psicología, tal como la ve el conductista (1913)". En: José Gondra. *La psicología moderna*. *Textos básicos para su génesis y desarrollo histórico*. Bilbao: Desclée de Brouwer.
71. Wundt, Wilhelm. (1982). "Objetos, divisiones y método de la psicología (1896)". En: Gondra, José. *La psicología moderna*. *Textos básicos para su génesis y desarrollo histórico.*Bilbao: Desclée de Brouwer. (Trabajo original publicado en 1896).

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An Attribute of a Female Stroke Patient of Bangladesh: Implementation ICF Model and Clinical Reasoning Skill

By Asma Islam, Md Obaidul Haque, Shamima Islam & Sultana Nasreen

Abstract- Stroke is the disorder where the brain is damaged either by a blockage in the blood vessels or rupture of the blood vessels of the brain. It is the 5th common cause of death and the leading cause for disability in most of the countries in the world. It is evident that a major group of the population dealing with a prolonged Disability-Adjusted life years where the clinician and rehabilitation practitioners are treating them with the traditional medical model. As a result, the treatments are often devised according to physical parameters and the outcome remains incomplete and unsatisfactory. Therefore the introduction of the bio-psychosocial model is crucial. This case study focused on a female post stroke patient's successful recovery in functional ability following a rehabilitation protocol which was provided by a bio-psychosocial approach. This study also emphasized how the clinician's expertise, proper Intervention time allocation, appropriate clinical reasoning skill, patient's willingness, and family support acted as the contributory factors for the success.

Keywords: *stroke, ICF model, clinical reasoning.*

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Asma Islam [α], Md Obaidul Haque [σ], Shamima Islam [ρ] & Sultana Nasreen [ω]

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I. Introduction

Stroke is the disorder where the brain is damaged either by a blockage in the blood vessels or rupture of the blood vessels of the brain. The risk factors predominantly are high cholesterol, diabetes, smoking, a trial fibrillation, and lack of physical activity. The early and common signs include asymmetry in face, unilateral weakness, unilaterally altered sensation, and troubling speech (Jin, 2014). The American stroke association (2016) described that stroke usually takes place at blood vessels which function is to carry blood and nutrition to the brain tissue. Due to stroke either by occlusion or by rupture of those blood vessels, the brain tissue doesn't get enough oxygen to survive and eventually necroses. They also declared that 80% of stroke is preventable by regular monitoring of blood pressure, maintain the cholesterol, blood sugar in the normal range, being active, having a balanced diet, losing weight, cessation of smoking, and by taking aspirin-like medication prescribed by specialist doctors. It is the third leading cause of death globally, where in the UK it is the major health problem. About 23% of people die within 30 days, where 60-70% of the remaining dies within three years. The morbid portion has prolonged stay in the hospital, reduced quality of life due to long term disability; therefore it is also the leading cause of disability in the UK. This causes a big compromise in the economic sector due to loss of productivity (Parmer, Sumaria & Hashi, 2011). According to the American stroke association (2016), it is the 5th common cause of death and the leading cause for disability in the United States. It is also the leading cause of long-term disability. African American people are more affected by stroke. As stroke affects the central nervous system, especially when the brainstem, the vestibular system is more likely to affected and can cause dizziness, vertigo eventually imbalance. Among the stroke survivor about 40 percent have serious falls within a year of their stroke. women stroke survivors experienced difficulty maintaining their balance while dressing was seven times more likely to fall than women who didn't report balance problems (American heart and stroke Association, 2015). In Bangladesh, it is identified as the third leading cause of death. The mortality is ranked 84 in the world by the World Health Organization in Bangladesh. The prevalence of stroke is 0.3% in Bangladesh which was found in a hospital-based study. The study also found hypertension is the main cause both for ischemic and hemorrhagic stroke. The severity of the economic impact of stroke was further described by the disability-adjusted life years lost was 485 per 10000 people (Islam et al. 2013). It is evident that a major group of the population dealing with Disability-Adjusted life years where the clinician and Rehabilitation practitioners are treating them with the traditional medical model. In this model, the disease is defined strictly based on of organic malfunction (Farre & Rapley, 2010). As a result, the treatments are often devised according to physical parameters. Moreover, there is a clinician centered approach of assessment and management frequently missed the psychosocial aspect of the disease process. Consequently, the treatment outcome remains incomplete and

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unsatisfactory. Therefore the introduction of the biopsychosocial model is crucial. The International Classification of Functioning, Disability and Health (ICF) is a framework to measure health, and disability. It was authorized by the World Health Organization (WHO) in 2001 through the fifty-fourth World Health Assembly of the 191 member states. It is used as a standardized tool or language to describe and measure health and disability across the world (WHO, 2018). This classification system allows a clinician to focus on the bio-psychosocial aspects such as the anatomical or physiological impairment, Environmental, personal issues, participate in daily living events as well as social events (ICF, 2001). Therefore it helps to develop a comprehensive assessment approach and a complete rehabilitation approach. ICF concept further accompanied by sound clinical reasoning skills. Clinical reasoning is thinking and decision-making process which guides practice (Higgs and Jones, 2000). This skill helps the clinician to have informed decision therefore successful rehabilitation. This study will be an attribute of a stroke patient who was treated and rehabilitate successfully at the center for the rehabilitation of the paralyzed (CRP) in Bangladesh. The case came to the author in the month of February 2019. The case had significant improvement throughout the rehabilitation service; therefore it was selected as a successful case history.

II. The Case History

The case is Mrs. X; Aged 50 years old lady who was the mother of 6 children had a stroke in December 2018. She was the principal of a renowned secondary school in Bangladesh. While continuing her duty suddenly she couldn't raise her left upper limb, and within a few seconds she fell. She was taken to the Local medical college hospital and stayed one day. The next day, she was taken to the Tertiary Neuroscience hospital at Dhaka city. She went through conservative management. After fifteen days she was discharged and came back to her home town. She came with his elder son to CRP in the 2nd week of January 2019. She was assessed and treated by a qualified Physiotherapist in the Neurology outpatient Department of CRP. She had already treated eight sessions of physiotherapy. The investigator (article writer) reassessed him. Her initial situation found by the previous therapist that she was completely bed-bound and dependent. She developed Left-sided hemiplegia with no sitting and standing balance. She was unable to obtain any postural change by herself. She and the entire family members were very frustrated. She was reassessed by the author of this article and found that the patient developed left sided hemiplegia following a history of feeling unwell for the last few days before the incident. The patient was thoroughly assessed and discovered that she was hypertensive and diabetic for many years and not under control. Often she used to refuse the treatment. She used to have an intensive, stressful working situation as she was holding a superior position at her school. She also had some familial issues regarding her husband. She was on sick leave from her school and was very anxious about her job. She wanted to go back to her work as soon as possible. She was an educated patient, and she could understand the instruction very well. On examination, it was found that she was hypertensive for many years and other vital signs were stable. She needed moderate support for rolling, sitting, standing. She cannot able to walk. She had a limitation in the ROM at shoulder flexion and abduction. She developed shoulder pain, but didn't have any shoulder subluxation. She had a Lack of Balance and upper limb activities. Her physical examination also revealed that she had moderate spasticity at her left upper limb, which was more in the distal segment. After eight sessions of conventional management within two weeks, she had no significant improvement and became very frustrated. The new investigator assessed her according to the ICF core set guideline in a multidisciplinary team setting. Many unrevealed issues, especially the psychosocial aspect, revealed, and for her treatment, the hospital assigned Physiotherapist, Occupational therapist, and Psychologist. The treatment continued for sixteen sessions within three and half months. Within this time patient went through an intensive treatment strategy which included some evidenced-based treatment such as Standing balance training with biofeedback, body weight supported parallel bar instead of the treadmill, circuit training, water-based exercise, Constraint-Induced Movement Therapy (CIMT), strength and cardio-respiratory exercises along with conventional management, and psychological counseling. Several pieces of evidence were found from the scientific literature, which were presented in the following paragraph. Only a few of them were chosen as mentioned above, which were convenient. After completion of the treatment, the patient now has good sitting and standing balance. Her muscle tone reduced, and the upper limb becomes more functional. She still has fine motor difficulties. She had no pain at the shoulder. Most of the activities of daily living are now independent. She still has a problem in gait. She was satisfied and hopeful to continue her job again.

III. Evidence- Based Physiotherapy in Stroke Rehabilitation

The therapist treated the patient by the evidence-based treatment approaches, which will provide a better outcome. To implement the ideas, proper training of therapists, improvement of infrastructure with high technology assessment and

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treatment devices and timing of treatment sessions are important.

— A systematic review by Pang, Charles worth, Lau, and Chung (2012) found that 20-40 minutes aerobic exercise such as Treadmill, and cycle ergo meter, 3–5 days per week is beneficial for enhancing aerobic fitness, walking speed and walking endurance in people who have had mild to moderate stroke and are suppose to have low cardiovascular risk with exercise.

— A systematic review by Veerbeek, Wegen, Peppen, Wees, Hendriks, Rietberg, and Kwakkel (2014) found the following features.

- Standing balance training with biofeedback in the early and late stages of stroke rehabilitation, which consists of a force platform with force sensors to measure the weight on each foot and the center of pressure to give visual or auditory feedback to a patient found to be effective in reducing postural sway, therefore, improve balance.
- Body-weight supported treadmill training, which is the partial body support by a harness, was effective for comfortable gait speed and walking distance.
- Electromechanical-assisted gait training with functional electrical stimulation was found to be effective in improving balance and walking ability in the early stage of rehabilitation.
- Speed-dependent treadmill training without body-weight support was effective in improving gait speed and step width.
- Circuit class training which the supervised circuit class training is focused on gait and mobility-related functions and activities, in which patients train in groups in various work stations. This was effective for early and late stages of stroke rehabilitation to improve walking distance, balance, walking ability, and physical activity.
- Water-based exercises using the properties of water, designed by a qualified physical therapist with a suitably heated hydrotherapy found to be effective in improving muscle strength.
- Constraint-Induced Movement Therapy (CIMT) consists of immobilization of the non-paretic arm for 90% of the waking time for 2-3 weeks and is combined with repetitive task-specific training of the paretic arm improve arm-hand activities, self-reported amount of arm-hand use, and self-reported quality of arm-hand movement in daily life.
- Mixed strength and cardio-respiratory exercises including patients in the early rehabilitation phase and late rehabilitation phase were found beneficial for motor function of the paretic leg (synergy), muscle strength of the leg, comfortable gait speed, maximum gait speed, walking distance, aerobic capacity, heart rate during work, balance, physical activity, and quality of life.

— Another systematic review by Tayson and Kent (2013) found that Using AFO has an immediate improvement in functional ambulation, walking speed, step and stride length, weight distribution in standing.

— A systematic review by Corbetta, Imeri, and Gatti (2015) found Virtual Reality-Based Rehabilitation (VRBR) was beneficial in walking speed, balance and mobility in people with stroke. It is the technology-dependent intervention that creates an effect of a situation of particular action, which doesn't exist in the reality. It enables the simulated practice of functional tasks at higher doses than the traditional one.

IV. Implementation of ICF

ICF was established to promote a common understanding of disability and health by every practitioner. To incorporate that WHO and ICF Research Branch developed "ICF Core Sets," which provides the essential categories for the specific health condition. It was done through a scientific process by a group of multidisciplinary experts (Bickenbach, Cieza, Rauch, Stucki & Gottingen, 2012).

The following table will demonstrate the case in hand on the light of "Brief ICF core set for Neurological conditions for post-acute care" (ICF research Branch, 2017).

Body Functions = physiological functions of body systems (including psychological functions)	
Temperament and personality functions	-conscious about any situation.-emotionally stable -very much confident about improvement.-well interactive. -but often become a little nervous when an activity not performed well.
Energy and drive functions	-motivated -moderate energetic -very often has lack of appetite.
Thought functions	-participates in the family problem solution but feel unstable about his own decision. Depends on elder son for final decision making.
Higher-level cognitive functions	She has developed a brief problem in planning, making judgment. Often feel lack of confidence.
Mental functions of language	Normal

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Seeing functions	Normal
Blood pressure functions	Hypertensive for last few years but now it is under control by medication.
Additional respiratory functions	Normal, seasonal flu.
Ingestion functions	Feel sometimes a little difficulty in chewing due to dental problem. Often swallowing takes a little more time therefore aspirates.
Weight maintenance functions	BMI 21.5- Normal
Thermoregulatory functions	Normal
Urination functions	urge incontinence
Muscle endurance functions	Affected lower limb become fatigue quickly after walking approximately 10-15 meter.
Gait pattern functions	Slow hemiplegic gait. use one point stick .

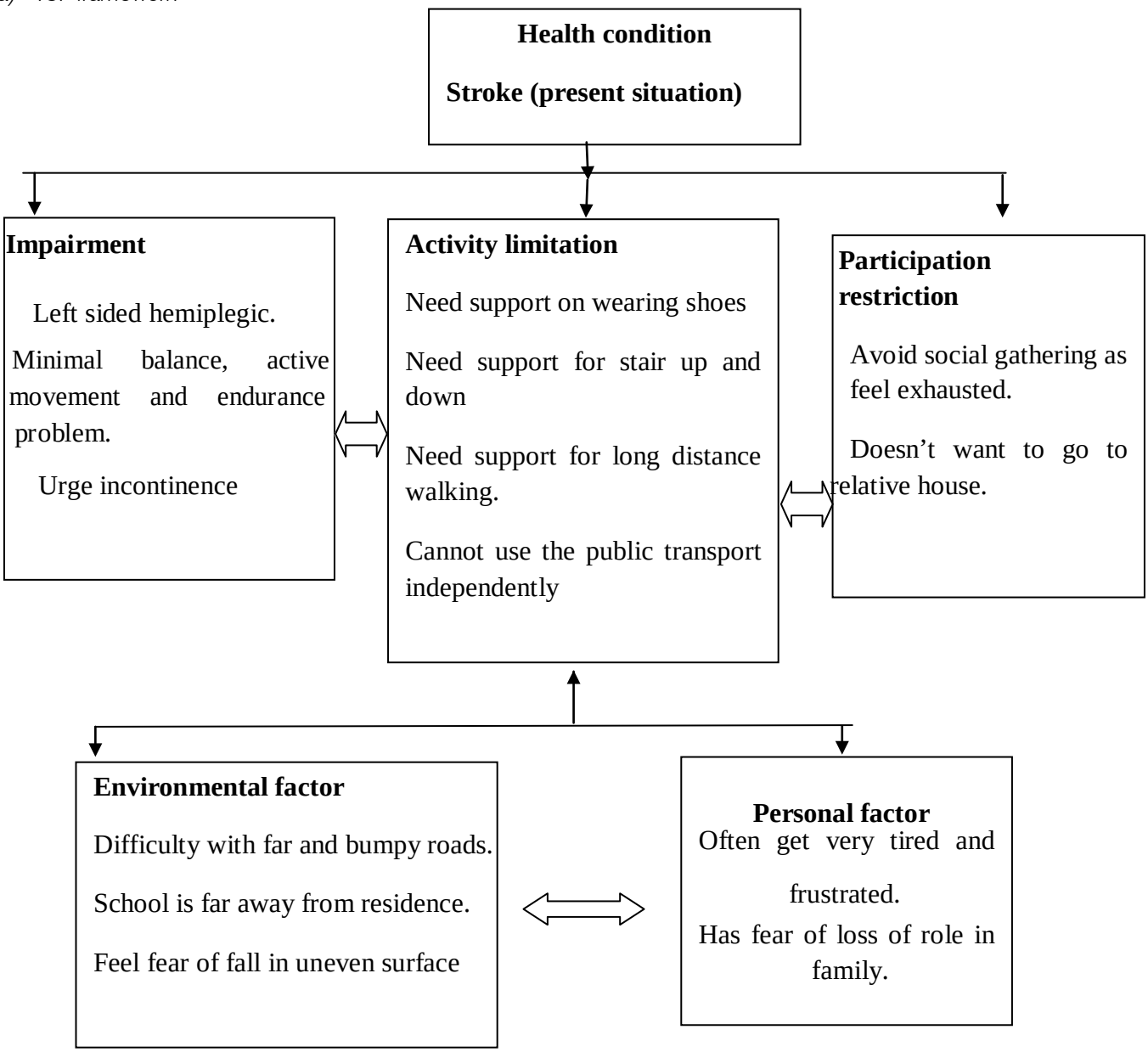
Body structure anatomical parts of the body such as organs, limbs and their components	
Brain	Hematoma in right capsule-ganlionic and temporal region with mild generalized atrophy of brain. 5/12/2018) Resolving cerebral hematoma. (3/1/2019)
Body	Left sided hemeplegia

ACTIVITIES AND PARTICIPATION execution of a task or action by an individual and involvement in a life situation	
Listening	Regular listen to audio of Quran. Feel no difficulty.
Acquiring skills	Feel lack of interest and tiredness.
Writing	Normal as she is a person with right side dominance.
Solving problems	Not quite confident.
Changing basic body position	Rolling, sit to stand, stand to sit is independent. Need effort and time. Walking need support from walking stick. Sometimes manual support needed to continue.
Transferring oneself	Floor transferring needs support. Otherwise same level transferring is independent.
Fine hand use	Complete loss at affected hand.
Walking	Need walking device and sometimes manual support, hemiplegic gait.
Moving around in different locations	Difficult
Moving around using equipment	At space constraint becomes difficult. Otherwise can do well with the help of only walking stick.
Caring for body parts	Independent. Bathing need a minimal support.
Toileting	Minimal support
Dressing	Moderate support. For wearing shoe need maximum support
Eating	Independent
Drinking	Independent

ENVIRONMENTAL FACTORS make up the physical, social and attitudinal environment in which people live and conduct their lives	
Products or substances for personal consumption	Delayed swallowing, often feel problem with big size tablets or capsule
Products and technology for personal use in daily living	Likes to read news paper. Hold with unaffected limb. In other technology no interest. Watch Television as well.
Products and technology for personal indoor and outdoor mobility and transportation	Use public transport (rickshaw) with the help of his son.
Products and technology for communication	Use mobile phone holding by unaffected upper limb.
Health professionals	Has treated by doctor, physiotherapist, occupational therapist and speech therapist. Stay very near to the hospitals.
Individual attitudes of extended family members	The family attitude is very positive and caring.

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a) ICF framework



V. Differential Diagnosis with Clinical Reasoning

This case came with a typical history and physical presentation of Stroke, which allow the investigator to recognize the pattern of a stroke patient very quickly. Here the investigator used her pattern recognition skill as the case was very familiar. Experts' reasoning in the non-problematic situations is pattern recognition, which is the automatic direct retrieval of information from a good and structured knowledge base (Higgs and Jones, 1995). Clinical reasoning is the skill that enables a clinician to think about a certain condition and to take proper decision; therefore it's a process of thinking and decision making (Higgs et al.1995). This reasoning skill depends entirely from clinician to clinician according to their knowledge, cognition, meta-cognition, practical experience, clinical expertise and so on. Such as Novice clinician are more likely to use hypothetical deductive where an expert will recognize the pattern instantly from the experience of similar cases. However, the following two differential diagnosis also came in mind and was excluded by the symptoms and investigations.

The differential diagnosis

1) TIA (transient Ischemic attack) -excluded as the symptoms persisted.
2) ICSOL (Intracranial space-occupying lesion-Tumor) - excluded through the CT scan, which shows Hemorrhagic stroke rather than any tumor.

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1. Treatment outcome

Domains	On initial Assessment	2 month after the initial assessment (approximately middle)	On Discharge(after 4 months)
Observation (general and local)	Came with wheel chair. Bed bound. Look very frustrated. No external device	Use walking stick, Looks confident	Can walk with the minimal support. Need stick for a long distance. Very confident.
Balance(Burg Balance scale)	0	36	45
Muscle tone Modified Ashworth scale score	3	1	1
AROM	No Active ROM –Lt upper limb. Hip had few degrees of dragging motion , knee and ankle was Zero	10 -15 degrees of shoulder elevation. Ankle dorsi flexion zero degree Hip flexion improves to 120 degree. Few degrees other hip motion.	All lower limb joints has function Range with residual loss. Few degress of dorsiflexion achieved. Upper limb remains same.
PROM	Full with normal end feel. Left side had end range pain and movement limitation on shoulder all movement	Full, except shoulder flexion. End range few degrees lost. No pain at shoulder.	Same as before
Pain	Left shoulder joint pain VAS- 7	VAS -5	No pain
Muscle Strength	No muscle power at upper limb and lower limb	Increase strength shoulder, elbow muscles, weak wrist flexor and extensor and fine motor function of hand.	She can use her upper limb for gross motor function but still has problem with fine motor function.
Functional Activities (FIM score)	1- Total assistance For sitting, standing, transferring, bed mobility, walking.	5-sitting, 5 standing, 4-transferring, 5 bed mobility, 4-walking.	6-sitting, standing, transferring, bed mobility. 5- walking
Psychological aspect	Very confused, frustrated.	Look confident	Very confident and optimistic.
Upper limb function (gross and fine motor)	No gross and fine motor function.	A little movement in shoulder only.	Full active 'Range of motion in shoulder and elbow.
MRI/CT scan	Haematoma in right capsulo-ganglionic and Temporal region with mass effect.	----	Resolving cerebral heaematoma with mass effect (right) oedema

VI. Patient's Perspective

The patient was very satisfied about the therapeutic service of CRP. She strongly believes that therapeutic service played the most important role for her improvement. She was also thankful that therapists gave her the idea to go back to her job as soon as possible.

VII. Learning Points

- It is very imperative to have a comprehensive assessment to diagnose and treat a case properly.
- Proper clinical reasoning skill is very obliging in making a decision.
- The assessment should be carried out according to the ICF guideline.
- Treating a patient is not only the duty of the clinician only but also the other health professional, care-provider, family members, and society.

VIII. Discussion and Conclusion

This case focused on a series of successful recovery in functional ability. The clinician expertise, Intervention time allocation, proper reasoning skill,

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practical or clinical skill, patient's willingness, and family support, which all acted as a contributor. Additionally, early referral and management also played an immense role in the improvement. According to The Clinical practice Guideline of American heart and stroke association, early diagnosis and treatment are crucial for stroke management (Jauch et al. 2013). Although the upper limb function was not achieved at all, the patient was developed a parallel skill which could compensate for the purpose in a satisfactory proportion. It is very vital to incorporate the evidence-based practice in the regular therapeutic regimen, which was not present effectively. The upper limb function needed careful consideration. Therefore, therapists should concentrate on ICF based rehabilitation strategies, evidence-based practice and sound clinical reasoning skills for the betterment of the service.

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Declaration of interest statement: I am declaring that this piece of study is only submitted to this journal for the first time. Authors declare no conflict of interest.

References Références Referencias

1. American Heart and Stroke Association. (2015, March). Keeping your balance after stroke. Retrieved on 22 January, 2019, from http://www.strokeassociation.org.
2. American Stroke Association. (2016). About stroke. Retrieved on 24 January, 2019 from https://www.strokeassociation.org/en/about-stroke.
3. Bickenbach, J., Cieza, A., Rauch, A., Stucki, G., & Gottingen, H. (2012). ICF Core Sets Manual for Clinical Practice. Retrieved on 12th June, 2018 from https://www.icf-core-sets.or
4. Brief ICF core set for Neurological conditions for post acute care (2017). ICF research Branch. Retrieved on 12th June 2018 from https://www.icf-research-branch.org/icf-core-sets-projects2
5. Corbetta, D., Imeri. F., & Gatti, R. (2015). Rehabilitation that incorporates virtual reality is more effective than standard rehabilitation for improving walking speed, balance and mobility after stroke: a systematic review. *Journal of Physiotherapy 61*, 117–124. D. O. I. http://creativecommons.org/licenses/by-nc-nd/4.0/.
6. Farre, A., & Rapley, T. (2017, December). The new old (and old new) medical model: four decades navigating the biomedical and psychosocial understandings of health and illness. In *Healthcare* (Vol. 5, No. 4, p. 88). Multidisciplinary Digital Publishing Institute.
7. Higgs, J. & Jones, M. (2000). Clinical reasoning in the health professions. In J. Higgs & M Jones (eds.), Clinical reasoning in the health professions, 3–14. Oxford: Butterworth-Heinemann. Butterworth-Heinemann.
8. Higgs, J., Jones, M. A., Loftus, S., & Christensen, N. (Eds.). (2008). *Clinical reasoning in the health professions E-book*. Elsevier Health Sciences.
9. Islam, M. N., Moniruzzaman, M., Khalil, M. I., Basri, R., Alam, M. K., Loo, K. W., & Gan, S. H. (2013). Burden of stroke in Bangladesh. *International journal of stroke*, *8*(3), 211-213.
10. Jauch, E. C., Saver, J. L., Adams Jr, H. P., Bruno, A., Connors, J. J., Demaerschalk, B. M., ... & Scott, P. A. (2013). Guidelines for the early management of patients with acute ischemic stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*, *44* (3), 870-947.
11. Jin, J. (2014). Warning Signs of a Stroke. Journal of the American Medical Association, 311(16), 1704. doi:10.1001/jama.2014.2296.
12. Parmer, P., Sumaria, S., & Hashi, S. (2011). Stroke: Classification and Diagnosis. The Pharmaceutical Journal. Retrieved on January 16, 2011, from https://www.pharmaceutical-journal.com
13. Pang , Y. C., Charles worth, S. A., Lau, R. W., & Chung, R. C. (2012). Using Aerobic Exercise to Improve Health Outcomes and Quality of Life in Stroke: Evidence-Based Exercise Prescription Recommendations. *Cerebrovascular Disease. 35*, 7-12. DOI: 10.1159/000346075.
14. Tayson, S. F., and Kent, R. M. (2013). Effect of an Ankle Foot Orthosis on Balance and Walking after Stroke: A systemetic Review and Pooled Meta analysis. *Archives of Physical Medicine and Rehabilitation.94,* 1377-85.
15. Veerbeek, J. M., Wegen, E., Peppen, R., Wees, P. J., Hendriks, E., Rietberg, M., & Kwakkel, G. (2014). What Is the Evidence for Physical Therapy Poststroke? A Systematic Review and Meta-Analysis. *PLoS ONE 9*: e 87987. doi:10.1371/journal.pone.0087987.
16. WHO (2018). International Classification of Functioning, Disability and Health (ICF) retrieved on 12th June 2018 from http://www.who.int/classifications/icf/en/.

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Neurological Symptoms in Patients with Mild Combat Traumatic Brain Injury

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Abstract- We evaluated 97 patients aged 23 to 37 years in the acute period of mild combat traumatic brain injury, prescription of which was from 2 to 5 days. We observed the loss of consciousness (from 5 to 20 minutes) in 39 individuals. We studied in detail the neurological status and state of the autonomic nervous system. We obtained the data that allowed to note the peculiarities of the disease course depending on the vector of action of the explosive injury with regard to the body side. Under the impact of the blast wave to one of the body sides we observed the following features as a nonspecific hemi syndrome, decreased of sensitivity to pain, decreased smell, decreased pain sensitivity on the tongue, decreased taste, hearing, decreased periosteal and tendon reflexes, decreased muscle strength and tonus on the side of the sensory defect, and when the direction of the blast is frontal (to the face), the clinical course of the disease is much more severe.

Keywords: acute combat traumatic brain injury, sensori motor nonspecific hemi syndrome, vegetative disorders, "sleep-waking" cycle disorders.

GJMR-A Classification: NLMC Code: WE 706

NEUROLOGICALSYMPTOMSINPATIENTSWITHMILDCOMBATTRAUMATICBRAININJURY

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Neurological Symptoms in Patients with Mild Combat Traumatic Brain Injury

Volodymyr Korshnyak

Abstract- We evaluated 97 patients aged 23 to 37 years in the acute period of mild combat traumatic brain injury, prescription of which was from 2 to 5 days. We observed the loss of consciousness (from 5 to 20 minutes) in 39 individuals. We studied in detail the neurological status and state of the autonomic nervous system. We obtained the data that allowed to note the peculiarities of the disease course depending on the vector of action of the explosive injury with regard to the body side. Under the impact of the blast wave to one of the body sides we observed the following features as a non-specific hemi syndrome, decreased of sensitivity to pain, decreased smell, decreased pain sensitivity on the tongue, decreased taste, hearing, decreased periosteal and tendon reflexes, decreased muscle strength and tonus on the side of the sensory defect, and when the direction of the blast is frontal (to the face), the clinical course of the disease is much more severe. We also observed the total anesthesia, violation of discriminative types of sensitivity throughout the whole body, accentuation of the sensory defect in distal parts of extremities and on the scalp, with a combination of a group of axial, hand, pathological foot reflexes.

Thus, we can characterize the clinical picture of a mild combat traumatic brain injury as having a significantly severe course, and it is much different from a civilian traumatic brain injury.

Keywords: acute combat traumatic brain injury, sensori motor nonspecific hemi syndrome, vegetative disorders, "sleep-waking" cycle disorders.

I. Introduction

Definition of mild traumatic brain injury (mTBI) caused by an explosive wave is a problem in both wartime and peacetime. American Ministry of Defense determines a mild traumatic brain injury as a "head trauma associated with a loss or alteration of consciousness for up to 30 minutes, loss of consciousness for the period not less than 24 hours or post-traumatic amnesia which lasts not less than 24 hours».

In our opinion, the mTBI, which is caused by the blast wave, differs from the other forms of a closed TBI in that the physical forces resulting from the blast wave and causing the TBI differ from the physical forces causing the closed civilian TBI, which in our opinion is more than reasonable.

Combat traumatic brain injuries are the complex combined brain injuries that includes concussion, acoustic injuries, vibration traumas, additional contusions to the head, spine, lung, heart, and other organs and body parts. However, an integral part of all barotraumas is a real concussion as a result of an air wave action that corresponds to a short massive blow by a wide, dense surface [2, 3, 4, 5].

The main clinical manifestations of trauma (loss of consciousness, hearing and speech, headache, dizziness, amnesia) are associated with changes in the brain so that the overall impact of a shockwave on other parts of the body tends to be secondary. But this effect remains, and above all, it is a very strong, short-term effect on the baroreceptors, tactile receptors, and skin pain receptors, the number of which on each square centimeter of the skin reaches dozens. That is, there is a super-powerful flow of afferent impulse, which can cause inhibition of the activity of brain structures, especially the basal ones, which causes their desynchronization and imbalance, which worsens the consequences of the direct impact of a shock wave on the same structures and forms specific neurological symptoms at the patient in the future.

II. Aim of the Work

To study the features of the clinic and neurological status in combatants with mild traumatic brain injury.

III. Research Materials

We examined the clinical characteristics of the acute period of mild combat TBI in 97 patients who were on inpatient treatment at the neurological department of the Military Medical Clinical Center of the Northern region and at the neurosurgical clinic of the Institute of Neurology, Psychiatry, and Narcology of the Academy of Medical Sciences of Ukraine from 2014 till 2018.

The study included patients who met the following criteria: a) age 23 - 37 years; b) no somatic and neurological depressing history; c) presence of only mild TBI (without alcoholic intoxication, chest injuries, tuberculosis at the time of injury, and other somatic, mental disorders). These criteria allowed us to exclude as much as possible factors that significantly affected the course of the disease. Neurological status was examined and studied in detail.

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IV. The Obtained Results and Discussions

Through the initial survey, it was found that most patients at the time of injury estimated the distance from the site of the projectile or mine explosion for 4 to 6 or 10 meters. The duration of trauma at the time of the survey was between 2 and 5 days. At the time of injury, 39 people lost consciousness (for the period of 5 to 20 minutes).

The major complaints of patients in the acute period were headache, vegetative disorders, unsteady gait, fatigue, memory loss, and impaired sleep-wake cycle.

All examined patients complained of a headache. Its localization was not the same in these patients: in 41 patients, it was localized in the frontotemporal region; in 35 - in the left or right side of the head; in 12 - the pain was localized in the occipital region and 9 people - the headache was diffuse, "the pain through the whole head." (Table 1).

The frequency of occurrence of subjective manifestations of the acute period of the combat TBI, such as headache, dizziness, nausea, noise in the head, general weakness, sleep disturbance, are presented in table 1.

Table 1: The major complaints in the acute period of the mild TBI caused by the explosive wave

Complaints	Number of patients	P
Headache	97 (100%)	<0,05
- persistent	71 (73%)	<0,05
- cyclic	26 (27%)	
Dizziness	82 (85%)	<0,05
- persistent	18 (19%)	
- cyclic	64 (66%)	<0,05
Vomiting	78 (81%)	<0,05
Pain in eyes	72 (74%)	<0,05
Noise in head and ears	65 (67%)	<0,05
Asthenic signs	91 (94%)	<0,05
Hyperhidrosis	59 (61%)	<0,05
Memory impairment	85 (88%)	<0,05
Drowsiness throughout the day	77 (80%)	<0,05
Sleep disorders	91 (94%)	<0,05
Fears	24 (25%)	
Finger tremor	57 (59%)	<0,05

The major complaint during the initial examination of patients was a headache, which occurred in all 97 patients ($p < 0.05$). In 71 patients, the headache was persistent. The nature of the headache was pressing, bursting, mainly in the frontotemporal and parietal areas with a feeling of pressure on the eyeballs. Heavy headedness was noted by 81 (84%) of the examined. When turning the head, 42 (43%) of the patients complained of increased dizziness and nausea.

The cyclic dizziness was noted in patients in 64 (66%) cases and was accompanied by severe affective (fear, anxiety) and vegetative phenomena.

The asthenic manifestations were observed in the acute period in 91 (94%) of the examined patients and characterized by physical and neuropsychic weakness, a feeling of fatigue and general malaise, inability for prolonging neuropsychic and physical stress; there were objective signs of a decrease in the functional capabilities of the body and personality-decreased functioning, fatigue, the inability to perform even easy types of any activity. This condition did not improve after sleep and rest and was observed in them about 2-3 months later after the cerebral trauma.

Sleep disturbance observed in 91 (94%) of the examined persons and manifested itself in the superficial nature of sleep, in complaints about lack of rest, premature awakening, sleepiness during the day ("I would like to sleep, but something does not let me do that"), weakness and tiredness during the day.

There are various pathophysiological processes in the genesis of asthenic manifestations, which may include: a) disorders of neurodynamics of cortical processes resulting from trauma - weakening of internal inhibition, exhaustion of excitation, damage to the intermediate brain and weakness of activating influence of the ascending reticular formation; b) disorders of limbic mechanisms of emotions, motivations and activating nonspecific systems of diencephalon and mesencephalon, and disorders of cortical-subcortical balance.

We noted the sleep disturbances during the initial examination of 91 (94%) patients, which was manifested in light, superficial sleep, as well as premature awakening, which was further expressed by severe drowsiness during the day, sleepiness, and weakness. Regardless of the structure of sleep

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disturbance, patients complained of a lack of rest, often night and morning headaches. All this indicates dysfunction in non-specific brain systems, which is caused by a violation of the relationship between the activating and synchronizing systems of the brain, which specifically disrupts the sleep-wake cycle.

In most cases, patients complained of pronounced general weakness, rapid fatigability, constant nausea, impaired sleep-wake cycle, a sharp decrease in memory for current events, and drowsiness during the day.

Neurological status was not the same for all patients and depended on the direction of the blast wave with regard to the patient's side.

We want to note that in 9 patients the direction of the shock wave was "to the face" (Fig. 1). With a detailed objective neurological examination, they observed a slowdown in motor activity, anosmia on both sides, paresis of the eyeballs, the lack of reaction of the pupils to light, facial amimia. Movement of the eyeballs to the sides was impossible (the patient watched the subject with his eyes turning his head)-the syndrome of doll eyes. There was a deterioration in hearing from two sides, speech was quiet and slow downed. The increase in sound strength caused painful facial expressions.

Also, we noted a sharp decrease in strength in the distal extremities, in tendon and periosteal reflexes up to the areflexion. The coordination test was not performed clearly by patients. Rough ataxia with static tests took place. We observed the severe hyperhidrosis (especially of the distal extremities). The skin of the upper and lower extremities was bluish (according to the type of long "socks" and "gloves") (Fig. 1).

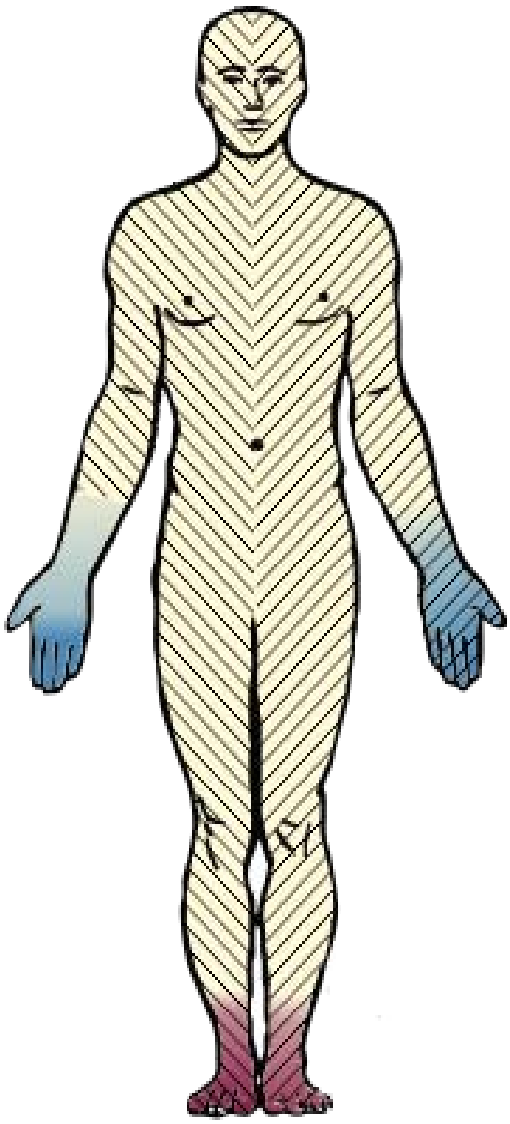


Figure 1: The vector of the blast wave action to the face

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We noted the swollened distal parts of extremities (especially in the ankle segment) and limited finger movements due to pain.

When a blast wave was directed to one side (right or left) of the head or body, we observed sensitivity disorders of hemihypalgesia type, which were distinguished by significant severity, relative homogeneity, weak dynamism, or unusual stability of sensory hypesthesia on the same side (Fig. 2). At the same time, on the side of the sensory defect, there was no corneal reflex, a slight decrease in smell, pain sensitivity in the tongue, and a decrease in taste and hearing were noted. On the side of the sensory defect, inhibition of periosteal and tendon reflexes, the decreased muscle strength, and muscle tone in the limbs were observed. We noted a mild upper and lower Barre's syndrome. In most of the examined patients this syndrome was stable, without significant dynamics for a year or more.

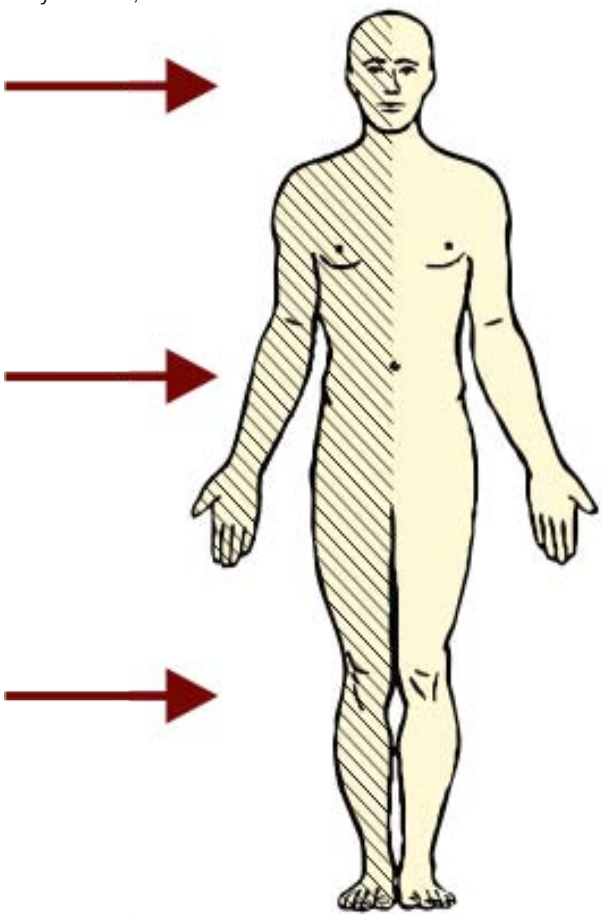


Figure 2: The vector of the blast wave action to the right side of the body

When an individual obtain the TBI from an explosive wave, damage to different parts of the brain depends on the direction of the damaging force vector.

If the direction of the blast force is "in the face", its vector is directed in the sagittal plane, i.e., on the frontal-occipital axis, with brain damage occurring in the frontal (impact) and occipital lobes (contrecoup). Inhibition of motor and cognitive functions, expressed in general weakness, accompanies the damage to these parts of the brain. In the sagittal direction of the action of the force vector, due to the hydrodynamic impact of the liquor in the walls of the III and IV ventricles, there is pressure on the vegetative centers, located at the bottom and walls of these ventricles, as well as pressure on the brain stem structures (I, III, VIII cranial nerves). Also, the nuclei of the lateral corners of the rhomboid fossa, which are part of the vestibular system, are also affected.

An anterior - posterior course of action, in addition to the above, may also be accompanied by hydrodynamic effects on the receptor apparatus of the inner ear, changes and disrupts the reception of sound signals.

A detailed neurological examination of the victims of the blast wave revealed diverse, polymorphic symptomatology of damage to the central and autonomic nervous systems. When inspecting, they focused on the most common symptoms of brain damage: nystagmus, nausea, deviation of the tongue, ataxia, and other violations in neurological status.

We presented the main clinical symptoms of brain damage in this patient group in Table 2.

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Table 2: The frequency of the objective symptoms in the acute period of mild combat TBI

Patterns	Number of patients	P
nystagmus	65 (67%)	< 0,05
convergence disorder	89 (92%)	< 0,05
Gurevich-Mann symptom	58 (59%)	< 0,05
decrease of corneal reflex	70 (72%)	< 0,05
facial asymmetry	19 (20%)	
deviation of tongue	28 (29%)	
tongue swelling	53 (55%)	< 0,05
tendon anisoreflexia	68 (70%)	< 0,05
disorder of hemitype sensitivity	73 (75%)	< 0,05
pale skin	67 (69%)	< 0,05
tremor of the eyelids, fingers	88 (91%)	< 0,05
ataxia	94 (97%)	< 0,05
pathological symptoms	52 (54%)	< 0,05
vegetative disorders	93 (96%)	< 0,05
dermographism impairment	97 (100%)	< 0,05
hyperhidrosis	81 (84%)	< 0,05

It can be seen from Table 2, that the most frequent objective signs in case of mild combat TBI were symptoms reflecting vegetative and vascular disorders. And the most frequent symptoms of CNS injury were nystagmus (67%), convergence disorder 89 (92%), and decrease of corneal reflex 70 (72%). We found the rest signs of mild combat TBI in more than 29% of injured.

Nystagmus at the initial examination occurred in 65 (67%) patients. It was more often horizontal, small-swinging, and combined with complaints about headaches of different nature (most often patients noted acute pain with photophobia and hyperacusia). We observed the disappearance of nystagmus in most patients on 7-12 days after hospitalization. Normalization of the general condition occurred on 20-27 days of hospitalization in 70% of all hospitalized patients. The rest of the patients needed further rehabilitation.

Symptoms of the vegetative nervous system (VNS) damage were observed in 93 patients. At the time of blast wave injury, there was damage to various parts of the brain that are responsible for vegetative regulation. Our investigations established that an indirect effect on vegetative functions through numerous connections with specific centers of vegetative regulation can be provided by almost all brain structures. Therefore, if any brain structure is damaged, especially if there is diffuse damage to its various segments, the probability of occurrence of dysregulating autonomic disorders is quite high [3].

The symptom of dysfunction of the VNS in prevalence takes the second place in patients of this group. These lesions are most defined in the clinical picture and, in many respects, determine the further course of the mild concussion TBI [2, 3, 5]. These include symptoms such as bradycardia, arterial hypertension/hypotension, acrohyperhidrosis, paleness, or hyperemia of the face, dermographism impairment.

We found the increase in blood pressure upon the admission to the clinic in 14 patients, hypotension – in 49 patients. We detected the dermographism impairment in 97 people. Distal hyperhidrosis occurred in 81 patients.

To evaluate the state of vegetative homeostasis in these patients, we evaluated: the initial vegetative tonus (VT), the vegetative reactivity (VR), the vegetative provisioning (VP) according to the generally known method [1].

The integrative state of the functional activity of VNS, according to the Kerdo index, showed that parasympathicotonia was observed in 79 (82%) patients, sympathicotonia in 14 (14%). The obtained results indicate the predominance of the action of the parasympathetic branch of the VNS in the majority of those, who were examined in the acute period of mild combat TBI.

During the initial examination, autonomic reactivity in 73 (75%) people was insufficient. VP in 79 (82%) patients was insufficient and in 15 (15%) - excessive.

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Table 3: Vegetative indexes in patients with acute mild closed TBI

Vegetative indexes	Major group (n=97)	p
Kerdo vegetative index		
Normotonia	4 (4 %)	p>0,05
Sympathicotonia	14 (14%)	p>0,05
Parasympathicotonia	79 (82%)	p<0,05
Vegetative reactivity		
Normal	1(1%)	p>0,05
Insufficient	73 (75%)	p<0,05
Excessive	5 (5%)	p>0,05
Distorted	18 (18%)	p>0,05
Vegetative provisioning		
Normal	3 (3%)	p>0,05
Insufficient	79 (82%)	p<0,05
Excessive	15 (15%)	p>0,05

Thus, the obtained results indicate that in the acute period of mild concussion combat TBI there is a pronounced imbalance and desynchronization in the activity of the VNS structures caused by the action of the blast wave on the higher vegetative centers (Table 3).

Currently, there is no doubt that closed TBIs, especially concussion injuries, considerably simulate the neurology of nonspecific brain structures and that many of their clinical and pathophysiological features are determined by the nature and severity of damage to these structures.

One of the major and general features of sensory disturbances in combat concussive traumatic brain injury is, as a rule, that they manifest themselves in the form of unusual, atypical variants that differ from classical sensory syndromes.

Unusual sensitivity disorders discovered by us at the initial stages of the study are total-type sensitivity disorders, peculiar variants of the half-length, longitudinal type.

The syndrome of total anesthesia was characterized by changes in all kinds of sensitivity throughout the body or mainly violations of discriminative types, the accentuation of a sensory defect in the distal extremities and on the scalp; less significant depth of sensitivity disorder in the proximal regions and on the trunk; initial restoration of primitive, and later-complex types of sensitivity. We observed such disorders in patients who got the blast wave directed to the face (Fig. 1).

Also, in the acute period of combat closed TBI, there is a significant number of symptoms in the form of a combined group of axial, wrist, foot pathological reflexes, among which a combination of axial Marinesco-Radovici sign, Bekhterev mandibular reflex with Wartenberg, Babinsky, Chaddock foot reflexes and Wartenberg, Zhukovsky and Rossolimo-Venderovich hand reflexes. This combination of pathological axial, hand, and foot reflexes, as a rule, was symmetrical and was observed by the author in half of the observations [4].

In the presence of this syndrome, it is impossible to determine the localization of the lesion or even several of them within the sensory systems, which would give a picture of the global half-sensory defect, including sensory hypesthesia. A one-sided change in taste, hearing, and smell occurs only when the corresponding receptor apparatuses or the first neurons and brain nuclei in which they end are damaged. It is only based on these facts that when the brain is damaged by the blast wave and have these hemisyndromes, it is said that the extralemniscal formations are involved in the process, which functionally combines various specific systems within one half of the brain - sensory, etc.

It is the so-called non-specific sensorimotor hemisyndrome of the extralemniscal type. There is no doubt that craniocerebral contusion injuries significantly modulate the neuropathology of nonspecific brain structures (nonspecific structures of the limbic system, spinal reticular, reticulospinal tract, spinothalamic tract) and many of their clinical and pathophysiological features are determined by the nature and severity of damage to these structures.

In this regard, we should note the role of non-specific regulatory systems of the brain. The influence of the reticular formation provides particular filtering of impulses that are directed to the cerebral cortex, thus preventing the excessive “bombardment” of the brain by afferent impulses. The downward influence of the reticular formation on the sensory systems is one of the major mechanisms by which the flow of impulses that carry information that is necessary for constant orientation in the environment is controlled, changed, and modulated already at the input.

The influence of the reticular formation on the sensory systems in the ascending direction can be twofold: firstly, speech can affect changes in the general

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excitability of neurons in the brain with a diffuse ascending activating effect; secondly, under its influence, the excitability of sensory systems at the cortical level can be selectively changed, regardless of the functional state of the cerebral cortex as a whole. The functional state of the reticular formation, which affects the cortical sensory mechanisms, in turn through the cortifugal and corticoreticular systems, is controlled by the cortex itself.

Also, with this pathology, there is a violation of the activity of the vestibular analyzer and receptor apparatus of the inner ear [6]. Our studies confirm that the central departments of the auditory analyzer suffer from explosive injuries. According to the registration of auditory evoked potentials, we detected the violations in the cork section of the auditory analyzer in 100% of the examined military personnel who were in the combat zone. Based on the data obtained, we can state that in combat cerebral trauma, violations are observed not only in the peripheral but also in the central departments of the auditory analyzer. According to evoked auditory potentials, in these patients, there is a violation in the cortical, subcortical, and stem structures of the auditory analyzer expressed to varying degrees. The data obtained by us confirm the significant role of the state of the stem and cortical parts of the auditory analyzer in the development of sensorineural disorders during combat concussion traumatic brain injury.

At the same time we found the cases of asymmetric damage to the auditory system (according to tonal threshold audiometry, acoustic impedance measurement) in most of the examined military personnel, which may be due to the impact of a shock wave to one side of the head [4].

Thus, concussion combat TBI is a polytrauma and, in its characteristics, differs significantly from a peacetime injury. In traumatic brain injury caused by a blast wave, there is a diverse, polymorphic symptomatology of damage to the central and vegetative nervous systems. In the acute period of trauma, the major complaints of patients are complaints of a headache, impairments of the vegetative nervous system, and violation of the “sleep-wake” cycle.

V. Conclusions

The modern combat traumatic brain injury with a concussion and contusion of the brain of a mild severity have more severe course in the acute period compared to a closed peacetime TBI.

The closed TBI due to the blast wave is combined with stress, the influence of this complex is mediated through the functional systems of the brain and leads to the tension of the autonomic mechanisms and is accompanied by autonomic disorders that are permanent. Structural and functional insufficiency of suprasegmental structures, which occurs in the acute period of TBI, can develop in the life of patients when they require the tension of adaptive mechanisms, which, in turn, can lead to disruption.

Cerebral trauma received during the war-time is a complex of structural and functional changes of the nervous system of the adaptive type, which is a dynamic, multilevel process. The severity and dynamics of clinical manifestations of structural and functional disorders of the main pathogenetic processes directly depend on the severity of the injury.

References Références Referencias

1. Vegetative disorders: clinic, treatment, diagnostics (2000). Under edition of A. M. Vein. Moscow. Medical News Agency Publ. 752 p.
2. Kas, Yu. V, Korshniak, V. O., Polishchuk, V. T. (2015). Features of acute closed traumatic brain injury caused by an explosive wave in combatants in the eastern Ukraine. Visnyk naukovih doslidzhen. No.2. pp.41-45.
3. Korshniak, V. O. (2016). Influence of an explosive wave on the formation of neurological symptoms in patients with combat traumatic brain injury. Mizhnarodniy nevrolohychniy zhurnal. No. 5 (83). pp. 83-87.
4. Acute combat contusion traumatic brain injury: pathogenesis, diagnosis, treatment (2018). Under edition of Korshniak V. O. Kharkiv. IE Liburkina L. M. Publ., 156p.
5. Lihterman, L. B., Kravchuk, A. D., Filatova, M. M. (2008). Brain concussion: tactics, treatment and outcomes. Moscow. IP "T.M. Andreeva" Publ. 160 p.
6. Shidlovskaya, T. A., Petruk, L. G., Shidlovskaya, T. V. (2017). Acoustic trauma in the combat zone. Provision of medical aid for sensory-neural hearing impairments: diagnosis, treatment, stages, prevention. Kyiv. 61p.

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Pain in Parkinson's Disease: From the Pathogenetic Basics to Treatment Principles

By Alenikova Olga

Abstract- Pain syndromes are quite common in Parkinson's disease, in addition to the motor defect, can significantly worsen the quality of life. Various types of pain related to PD have been described. Different clinical characteristics of the pain, variable relationship with motor symptoms, and variable response to dopaminergic drugs, as well as, in some cases, the dependence its appearance in a specific time of the day, suggest that pain in PD has a complex mechanism with the widespread impairment of the sensory information transmission at different levels of the CNS. In addition to the dopaminergic systems of the brain and spinal cord, non-dopaminergic systems (nor epinephrine, serotonin, gamma-amino butyric acid, glutamate, endorphin, melatonin) are also involved in the development pain syndromes in PD. A neurodegenerative process associated with PD establishes a new dynamic balance between the nociceptive and antinociceptive systems, which ultimately determines the level of pain susceptibility and the pain experience characteristics. Basal ganglia along with amygdala, intralaminar nuclei of the thalamus, insula, prefrontal cortex, anterior and posterior cingulate cortex determine the motor, emotional, autonomic and cognitive responses to pain.

Keywords: pain, parkinson's disease, nociceptive pathway, basal ganglia, non motor symptoms, noradrenergic system.

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Pain in Parkinson's Disease: From the Pathogenetic Basics to Treatment Principles

Alenikova Olga

Abstract- **Pain syndromes are quite common in Parkinson's disease, in addition to the motor defect, can significantly worsen the quality of life. Various types of pain related to PD have been described. Different clinical characteristics of the pain, variable relationship with motor symptoms, and variable response to dopaminergic drugs, as well as, in some cases, the dependence its appearance in a specific time of the day, suggest that pain in PD has a complex mechanism with the widespread impairment of the sensory information transmission at different levels of the CNS. In addition to the dopaminergic systems of the brain and spinal cord, non-dopaminergic systems (nor epinephrine, serotonin, gamma-amino butyric acid, glutamate, endorphin, melatonin) are also involved in the development pain syndromes in PD. A neurodegenerative process associated with PD establishes a new dynamic balance between the nociceptive and antinociceptive systems, which ultimately determines the level of pain susceptibility and the pain experience characteristics. Basal ganglia along with amygdala, intralaminar nuclei of the thalamus, insula, prefrontal cortex, anterior and posterior cingulate cortex determine the motor, emotional, autonomic and cognitive responses to pain. Therefore, the treatment of pain syndromes in patients with PD should be based on profound fundamental knowledge about this problem and have a multidisciplinary approach.**

Keywords: pain, parkinson's disease, nociceptive pathway, basal ganglia, non motor symptoms, noradrenergic system.

I. Introduction

Pain syndromes are quite common in Parkinson's disease (PD), in addition to the motor defect, can significantly worsen the quality of life, being a source of stress and adjustment disorders. The prevalence of chronic pain in patients with PD varies widely from 34% to 83%, which is due to different diagnostic criteria and patient examination methodologies [1, 2, 3]. In some cases, the painful is not so pronounced, and patients may not report this complaint in routine visits to a physician, so it can only be detected by actively interviewing the patient with focus his attention on the pain sensations, as well as using special questionnaires [4].

Pain phenomena are very diverse in their characteristics and can appear at any stage of PD, changing their character and localization throughout the disease. Sometimes pain syndromes precede the motor manifestation of the disease, arising on the side of a future motor defect [5, 6]. Most pain syndromes fluctuate in parallel with motor symptoms [7] and therefore, are considered non-motor sensory fluctuations. A wide variety of pain syndromes suggests the presence of several pathogenetic mechanisms involved in their formation.

All ongoing studies in the field of pain disorders in patients with PD have two substantial drawbacks: 1) the difficulty in objectifying and quantifying (the presence of pain phenomena often do not correspond to objective changes detected using various neurophysiological research methods); 2) different types of pain disorders can be combined in one patient. Therefore, it is difficult to establish whether they are directly related to PD, whether existing pain syndromes are exacerbated by other diseases, or have a random, independent existence. Moreover, in practice, it is often difficult to identify the etiology or mechanisms of specific pain syndromes associated with PD, especially if they are not accurately identified and poorly localized by patients [8].

Ford's classification uses approaches based on the etiology of pain and its association with motor symptoms [9]. Painful symptoms in PD can be classified into five categories: musculoskeletal pain, radicular or neuropathic pain, dystonia-related pain, primary (central) pain, and akathisia.

II. Musculoskeletal Pain

Musculoskeletal pain is most common in patients with PD and is associated with rigidity, akinesia, postural, and tonic defects, which leads to or aggravates existing mobility disorders in the spine and limbs. This type of pain is often localized on the side of a motor defect and is characterized by the presence of myofascial trigger points, tonic tension, and muscle soreness. Changes in muscle tone and postural disorders lead to local overloads of the tendons, bone, and ligament us apparatus [10, 11]. Emerging pain and muscle cramps in patients with PD are the results of limited mobility in the affected limbs. Muscle tightening and cramps typically affect the neck, arms, and paravertebral muscles, while joint pain mainly affects the shoulders, hips, knees, and elbows.

One of the most common musculoskeletal disorders in patients with PD is shoulder stiffness, which may often be the first sign of PD. The prevalence of the

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"frozen shoulder," also called periarthritis or adhesive capsulitis, is higher in patients with PD than in age-matched subjects without PD [12]. It is indicated that in almost all cases, the initial symptoms of PD developed in the upper limbs ipsilaterally to the side of the «frozen shoulder». Hands and feet can also be deformed under the influence of akinesia and dystonic disorders.

Contractures caused by limited mobility due to the painare another category of musculoskeletal pathology in PD. The risk of contracture is proportional to the duration of immobility and the degree of akinesia. PD patients are more likely than older people in the general population to experience conditions such as mandibular joint pathology, bursitis, arthritis, fasciitis, spinal stenosis, and ankylosing spondylitis [13, 14].

III. Radicular or Neuropathic Pain

Radicular pain in PD is a neuropathic pain that occurs due to the concomitant spinal diseases involving the roots of the spinal cord. A characteristic feature of this disorder is that pain and discomfort are well localized by the territory of the nerve or spinal segment innervation and occurs in 14% of patients with PD [15]. At the same time, unpleasant sensations in the form of cooling, numbness, tingling, etc. can be mistakenly classified as central pain syndrome. Postural deformities and muscular-tonic disorders in PD can also predispose to the development of compression radiculopathy or neuropathy, the clinical manifestations of which tend to increase at the peak of dyskinesia [16].

IV. Dystonic Pain

The prevalence of dystonia-related pain ranges from 8% to 47% [17, 18, 19] in patients with PD experiencing pain. Dystonic pain is associated with motor fluctuations and has a relationship with dopaminergic medication. Dystonic spasms are among the most painful symptoms that a patient with PD may experience [8]. Dystonic pain may be spontaneous or triggered by movement or activity; they may be brief (lasting minutes), prolonged (lasting hours), or even continuous. Dystonia in PD can affect any limb, trunk, neck, face, tongue, jaw, pharynx, and vocal cords, usually developing in sites most severely affected by Parkinsonism. Dystonia may occur as an early morning manifestation of dopaminergic deficiency or as a wearing-off phenomenon later in the day or the middle of the night. In some patients, dystonia is a painful beginning-of-dose or end-of-dose phenomenon; in others, it develops at the peak of response to a dose of dopaminergic medication [8]. The most painful is the "end-of-dose" drug dystonia, which decreases or disappears after the next dose of levodopa is administered. Moreover, dystonic spasms of the "off" period often occur in the legs, while painful spasms of the "on" dystonia are localized in the neck, trunk, and cranial muscles. Early morning dystonia is most often a complication of prolonged administration of levodopa and is observed in patients with a long-term course of the disease [10, 20].

V. Akathisia

Akathisia is defined as a feeling of inner restlessness and an inability to remain still and manifesting as a constant need to move or change position. Akathisia is diagnosed in the presence of both motor and sensory components, but their ratio may be different [21]. The sensory component of akathisia is an unpleasant sensation in the form of anxiety, internal tension, painful sensations (crawling sensations, burning, or tingling), which imperatively prompt the patient to move during which these symptoms noticeably weaken. The motor component of akathisia is often represented by stereotypical movements (swaying of the body, constantly changing posture, kicking from foot to foot, wringing or rubbing hands, etc.). In severe cases, excessive motor activity is practically not amenable to arbitrary control. Due to the need for constant movement, such patients cannot keep up the conversation and do any work.

Akathisia is suggested to result from dopaminergic deficiency involving the mesocortical pathway, which originates in the ventral tegmental area and is known to be affected in PD [8]. An imbalance between dopaminergic and serotonergic/noradrenergic neurotransmitter systems [22, 23] also considered as a basis for akathisia. The development of akathisia is most often observed when taking antipsychotics medication [24], other psychotropic medications, especially Selective Serotonin Reuptake Inhibitors [25], monoamine oxidase inhibitor [26], and tricyclic antidepressants [27] have been associated with akathisia. Also antibiotics [28], calcium channel blockers [29], and even illicit drug use such as amphetamine, methamphetamine, and cocaine [30] can elicit akathisia [31]. In PD, akathisia often occurs spontaneously, but more often, its occurrence is associated with wearing-off phenomenon; that is, fluctuations in the severity of akathisia depend on the concentration of levodopa.

VI. Central Pain

The most complex in its characteristics, mechanisms of development and approaches to treatment is primary or central pain. The prevalence of central pain in patients with PD is 10- 12% [32, 33]. This type of pain can be associated with autonomic manifestations, with visceral sensations. It is typically not restricted to a nerve territory and has been described to affect body areas such as the face, head, pharynx, epigastrium, abdomen, pelvis, rectum, and genitalia [34]. Clinical observations also indicate that the unexplained painful sensation predominately localized

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on the more affected side especially in the "OFF" state [35, 36]. This indicates a connection a neurotransmitter disorder (dopaminergic deficiency) in the basal ganglia (BG) with impaired of the central pain modulation processes that can be improved with administration of levodopa [37, 38, 39]. The participation of the BG in the pain perception was proved by experimental and clinical studies, the results of which can be expressed in the following provisions: 1) during pain stimulation, the metabolism and blood flow in BG changes; 2) electrical or pharmacological stimulation of GB causes specific behavior of animals, similar to when they experience pain; 3) pain symptoms often occur after damage to the BG [40].

Even though the occurrence of central pain syndrome in PD is associated with adopaminergic depletion in determined brain structures, there is no correspondence between the degree of motor disorders and the severity of pain. So, for example, in some cases, pain is observed contra laterally to the motor symptoms of the disease. Sometimes the appearance of pain can precede the development of classic motor disorders in a few years [41, 42]. The severity of rigidity, bradykinesia, tremor, and postural instability in patients with pain symptoms in PD does not differ from that in patients without pain disorders. Also there is no correlation between the intensity of pain and tremor or rigidity [43, 44]. Although antiparkinsonian drugs reduce the motor symptoms and pain in PD, in some cases, they can also increase painful sensation.

So, its different clinical characteristics, variable relationship with motor symptoms, and variable response to dopaminergic drugs suggest that pain in PD has a complex mechanism with widespread of sensory disorders at different levels of the CNS. Non-dopaminergic systems (nor epinephrine, serotonin, gamma-aminobutyric acid, glutamate, endorphin) involved in the pathogenesis of various motor complications also make a significant contribution to the formation of central pain syndrome [45, 46].

In general terms, we can say that pain is a complex psychological and neurophysiological phenomenon with neural network in volving the lateral and medial pain systems. The lateral pathway, which includes the spinal thalamic tract, is a rapidly conducting system that projects directly to the lateral thalamus, the primary and sensory soma to sensory areas, the parietal operculum, and the insula cortex. The lateral system is significant for the sensory-discriminative component of pain since it provides information about pain localization and duration [47, 48, 49, 50]. Inhibition of the lateral thalamus reducing localization, one of the sensory discrimination elements of pain. The difficulty that patients have in localizing their pain symptoms supports this hypothesis [51].

The medial pathway is a system of slow-conducting fibers that projects in a caudal and rostral direction to higher centers by terminating in the gigantocellular nucleus, locus coeruleus, nucleus raphe magnus, periaqueductal gray, hypothalamus, intralaminar and medial thalamic nuclei, amygdala, hippocampus, anterior cingular cortex. This path has connections with the an autonomic nervous system and provides an autonomic, affective, cognitive «accompaniment» of pain.

The descending pathways originating in the brain stem and cerebral structures also makes a significant contribution to the integration and modulation of nociceptive information in the dorsal horn. The serotonergic, noradrenergic, and dopaminergic networks are the principal components of these descending pain mechanisms. [48].

Hypothalamic A11- A14 dopaminergic neurons project to the brainstem and all levels of the spinal cord, providing the main source of spinal dopamine. A11 dopaminergic function has been linked to pain modulation [52], spinal loco motor networks [53], and restless legs syndrome [54, 55].Dopamine acted as an excitatory and inhibitory neurotransmitter in the spinal cord to regulate sensory, motor as autonomic functions [56].

Dysfunction of the dopaminergic neurons of the ventral tegmental area (VTA) can play a role in the pathogenesis of central pain disorders. The VTA is the origin of the dopaminergic cell bodies of themesocorticolimbic pathway, which is related to the affective and motivational dimensions of pain perception and allows the ventral tegmental area to communicate with the prefrontal cortex and the anterior cingulate cortex [57]. Lesions of the ventral tegmental area can increase sensitivity to pain, while electrical stimulation of the same area can have an analgesic effect [58].Disorders of the VTA lead to appearance such phenomena as RLS, akathisia of the "off" period, "burning mouth" syndrome, pain phenomena, and «burning» in the genital area, etc. Clozapine, which has a high affinity for the D4 receptors of the mesocortical and mesolimbic dopaminergic systems, may be effective in treating this condition.

Patients with PD have significant pathological changes in the serotonergic system, which has an importantrole in the sensory and emotional properties of pain. So, Conte et al. [59] suggest that in PD patients with pain, the degeneration of noradrenergic and serotoninergic neurons in the locus coeruleus and raphe nuclei can be even more pronounced than in the substantia nigra [60]. It was established that the raphe nuclei have a big impact on the central nervous system. Projections from the raphe nuclei also terminate in the dorsal horn of spinal gray matter where they regulate the release of enkephalins, which inhibit pain sensation. Thus, degeneration of serotonergic neurons within the dorsal and median raphe nuclei detected during

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pathological studies can play important role in the occurrence of pain [61, 62].

Locus Coeruleus (LC) undergoes the most pronounced degeneration with a significant decrease in the level of nor epinephrine, which gives projections, mainly inhibitory, to almost all regions of the nervous system, including sensory areas (dorsal horn of the spinal cord, the principal sensory nucleus of the trigeminal nerve, parietal cortex, etc.). The occurrence of spontaneous sensory disturbances, perceived by patients as very unpleasant, poorly localized, and uncertain, is associated with degenerative processes in the LC, as well as functional and anatomical defects in the projections connecting the LC with the different structures of the brain [63]. It is also clear that the LC plays an importantrole in controlling autonomic function with involvement a direct output to sympathetic and parasympathetic preganglionic neurons of the IML of the spinal cord in addition to the projections innervating other autonomic nuclei. Moreover, The LC performs nociceptive modulation within the thalamus [64, 65] and densely innervates the amygdale that has great importance in the development of concomitant autonomic reactions, the cognitive evaluative responses and emotional accompaniment of pain phenomena.[37, 49, 65, 66, 67, 68].

In some pain phenomena and RLS, there is a distinct daily rhythm of their occurrence, which may reflect the involvement of the hypothalamic structures that regulate the diurnal cycles of physiological processes in the body. Although dopamine is a well-known modulator of circadian rhythms in the retina, daily changes in the other dopaminergic systems are also observed [69, 70], in particular in the tuberoinfundibular system. Moreover, it should be noted the important role of the imbalance between dopamine and melatonin in the pathogenesis of RLS and other symptoms of PD with daily and seasonal dependence [71, 72, 73]. It is known that melatonin is a multifunctional hormone, which is determined by the wide representation of its receptors in various brain formations. The highest hormone levels and the density of melatonin receptors (MT1, MT2, and MT3) are in the anterior hypothalamus (preoptic, mediobasal areas), followed by the diencephalon, hippocampus, striatum, and neocortex. Damage to any link in the regulation of hormone synthesis, starting from the retina, leads to a decrease in thenight time secretion of melatonin, as well as the desynchronization of circadian and biological rhythms [71, 74]. It was found that in Parkinson's disease, the night time secretion of melatonin is significantly reduced as the secretory activity of the pineal gland in general. Change in melatonin secretion contributes to the development of various non-motor symptoms of PD, including RLS and various pain disorders. It is known that in experimental animals, pineal melatonin has an analgesic effect due to interaction with opiate receptors. Since opioid peptides act as intermediaries of the analgesic effect of melatonin, a decrease in its modulatory functions leads to disorders of the «fine tuning» of the opioidergic system and contributes to the appearance of pain symptoms [71, 73].Melatonin may also mediate its analgesic activity by interacting with benzodiazepine, muscarinic, nicotinic, serotonergic, and α1 and α2-adrenergic receptors located in the different structures of the brain and also in the dorsal horn of the spinal cord [75]. Also melatonin plays a role in the occurrence of non-motor fluctuations in PD. It was established that central pain disorders and other motor and non-motor symptoms of PD (depression, anxiety) are subject to ON-OFF fluctuations during the day and have an association with melatonin dysregulation in the LC-pineal gland system [76].So, Anti-nociceptive and antiallodynic effects of melatonin can be used effectively in the management of pain, including central pain syndrome, which varies in intensity during the ON-OFF fluctuations.

Periaqueductal gray (PAG) is one of the critical components of a descending pain modulatory network that exerts a dual control, inhibitory or excitatory, on nociceptive transmission in the dorsal horn and trigeminal nucleus. The involvement of the PAG in the neurode generative process may also be considered as one of the key factors of central pain syndrome in PD. Most of these targets of PAG inputs are premotor centers that, in turn, project to sensory, motor, or autonomic nuclei of the brainstem and spinal cord [77]. PAG network also includes the prefrontal and anterior cingulate cortex, hypothalamus, amygdala, dorsolateral pontine reticular formation, rostral ventromedial medulla, and caudal rostral ventromedial medulla [77, 78]. Through connections with these structures, the PAG coordinates specific patterns of cardiovascular, respiratory, motor, and pain modulatory responses [79]. Neuronal activity within the PAG is affected by several neurochemical signals, including opioids, endocannabinoids, and neurotensin [80]. This region has been used as the target for brain-stimulating implants in patients with chronic pain.

The complexity and variety of pain syndromes in PD are often caused by a combination of several pathogenetic mechanisms in their development. Moreover, several additional factors also influence the intensity, prevalence and frequency in occurrence of pain phenomena. It is known that emotional factors can increase or decrease nerve impulses from peripheral nociceptors and thus modify the perception of pain. Fairly well studied is the question of the role of depression in the modulation of pain perception [51, 81]. Symptoms of depression can be observed in PD patients, ranging in intensity from mild to severe [82]. For this reason, depression should also be adequately treated. Another factor that can change the pain

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perception, is the state of cognitive functions such as attention.

The ascending pain-conveying pathway salong with descending pathways originating in the brainstem and above-mentioned cerebral structures have a great value in the integration and modulation of nociceptive information in the dorsal horn. Also they have extensive connections with brain areas associated with the cognitive-evaluative and affective motivational components of pain [83]. It is well known that the BG play a central role in the modulation of various functions, being a key component of parallel functional thalamus-cortex-BG loops associated with the motor, limbic and associative systems. In these, the BG are engaged not only in motor control but also in the multiplicity of aspects of the pain syndrome, including the integration of motor, emotional, autonomous, and cognitive responses to pain [37, 84]. Data obtained during neuro physiological and neuro imaging studies indicate involvement of the cerebral structures of the limbic circuitry, including the amygdala and intralaminar nuclei of the thalamus. A study using positron emission tomography found increased activation in the insula, prefrontal cortex, and anterior cingulate cortex during the "off" period [85]. All of these are areas of the limbic system associated with the affective-motivational dimension of pain. Morphological alterations in anterior cingulate cortex and posterior cingulate cortex were shown in Voxel-based morphometry studies in patients with chronic pain [86, 87, 88]. It was established that anterior cingulate cortex is involved in cognition and emotions [89], where as posterior cingulate cortex regulates attention and cognition [90]. Moreover, these brain regions interact with each other during pain experience, that is, cognition of and attention to pain [91].

VII. Conclusions

Thus, pain is one of the most frequent non-motor symptoms affecting PD patients and related to pathologic changes in the anatomical structures involved in nociceptive pain mechanisms. Although certain types of pain syndromes associated with PD were identified, in reality, as a rule, there is a combination of different types and pathogenic mechanisms of pain in each case. Maximum consideration of all these mechanisms brings us closer to choosing the right tactics for treating pain syndrome in PD patients. Great progress has been made in the study of pain syndromes in recent years, but many challenges remain, which forces specialists pay more attention to the fundamental issues of this problem. So, for example, the question: Is a chronic pain syndrome a cause of morphological changes in the considered brain regions, or does PD-dependent neurodegenerative process in the same anatomical structures with the corresponding neurotransmitter imbalance predispose to the appearance of pain at a determined stage of the disease?

The question of a causal-relationship between autonomic dysfunction, emotional and personal characteristics of the individual, the presence of depression and pain perception also remains open. The most complicated problem is also the objectification of pain and an objective assessment of its intensity. Because pain intensity is not simply determined by how much noxious information arises from injured areas of the body - pain is the outcome of neural processing at multiple central nervous system sites in the spinal cord and brainstem, limbic system, hypothalamus, and cortex. Moreover, reflex movements, autonomic reactions, altered attention, behavior features, a sense of unpleasantness are all part of the individual pain experience. In chronic pain sufferers, the fundamental excitability of the circuits responsible for all these components is altered, resulting in changes in neural connectivity and cognitive function about which we understand very little.

A neurodegenerative process associated with PD leads to neurotransmitter imbalance and establishes a new dynamic balance between the nociceptive and antinociceptive systems, which ultimately determines the level of pain susceptibility and the characteristics of the pain experience. Therefore, the treatment of pain syndromes in patients with Parkinson's disease should be based on deep profound fundamental knowledge about this problem and have a multidisciplinary approach.

References Références Referencias

1. Beiske A. G., Loge J. H., Rønningen A., Svensson E. Pain in Parkinson's disease: prevalence and characteristics. Pain. 2009; 141(1-2): 173–177. doi: 10.1016/j.pain.2008.12.004.
2. Lee M. A., Walker R. W., Hildreth T. J. A survey of pain in idiopathic Parkinson's disease. J. Pain Symptom Manage. 2006; 32: 462–469.
3. Roh J. H., Kim B.-J., Jang J.-H., et al. The relationship of pain and health-related quality of life in Korean patients with Parkinson's disease. Acta Neurologica Scandinavica. 2009; 119(6): 397–403. doi: 10.1111/j.1600-0404.2008.01114.x.
4. ChaudhuriK. R., Prieto-Jurcynska C., Y. Naidu et al. The nondeclaration of nonmotor symptoms of Parkinson's disease to health care professionals: an international study using the nonmotor symptoms questionnaire. Movement Disorders, 2010; 25 (6): 704–709.
5. Ha A. D., and Jankovic, J. Pain in Parkinson's disease. Movement Disorders, 2012; 27 (4): 485–491.
6. Tolosa E., Compta Y., Gaig C. The premotor phase of Parkinson's disease. Parkinsonism and Related Disorders. 2007; 13: S2–S7.

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7. Cury R. G., Galhardoni R, Fonoff E. T., Perez Lloret S, Dos Santos Ghilardi M. G., Barbosa E. R., Teixeira M. J., Ciampi de Andrade D. Sensory abnormalities and pain in Parkinson disease and its modulation by treatment of motor symptoms. Eur J Pain. 2016 Feb; 20(2): 151-165. 20(2): 151-165. doi: 10.1002/ejp.745.
8. Ford B., Pfeiffer R.F. Pain syndromes and disorders of sensation. In: Parkinson's Disease and nonmotor dysfunction. R. F. Pfeiffer and I. Bodis-Wollner (Eds). Humana Press, Totowa, New Jersey. 2005; 255-270.
9. Ford B. Pain in Parkinson's disease. Clinical Neuroscience. 1998; 5(2): 63–72. doi: 10.1016/S0 967-5868(98)90204-1.
10. Ford B., Pfeiffer R. F., Wszolck Z. K., Ebadi M. Pain in Parkinson's disease. Parkinson's disease. Second Edition. CRC. Press. 2012; 225-237.Truini A., Frontoni M., Cruccu G. Parkinson's disease related pain: a review of recent findings. J Neurol. 2013; 260:330–334
11. Riley D, Lang A. E., Blair R. D., et al. Frozen shoulder and other shoulder disturbances in Parkinson's disease. J Neurol Neurosurg Psychiatry 1989; 52:63–66.
12. Kosek E., Ordeberg G. Lack of pressure pain modulation by heterotopic noxious conditioning stimulation in patients with painful osteoarthritis before, but not following, surgical pain relief. Pain. 2000; 88: 69–78.
13. Lauten bacher S., Rollman G. B. Possible deficiencies of pain modulation in fibromyalgia. Clin. J. Pain. 1997; 13: 189–196.
14. Goetz C. G., Tanner C. M., Levy M., et al. Pain in Parkinson's disease. Mov Disord 1986; 1: 45–49.
15. Sandyk R. Back pain as an early symptom of Parkinson's disease. S. Aft. Med. J. 1982; 61: 3.
16. Tinazzi M., Del Vesco C., Fincati, E. S. Ottaviani, Smania, N.G. Moretto, et al. Pain and motor complications in Parkinson's diseaseJ Neurol Neurosurg Psychiatry. 2006; 77: 822-825.
17. Nègre-Pagès L., Regragui, D. Bouhassira, H. Grandjean, O. Rascol, Do PaMiP Study Group Chronic pain in Parkinson's disease: the cross-sectional French DoPaMiP survey Mov Disord. 2008; 23: 1361-1369.
18. Defazio G., Berardelli A., Fabbrini G., Martino D., Fincati E., Fiaschi A. Pain as a nonmotor symptom of Parkinson disease: evidence from a case-control study. Arch Neurol. 2008; 65: 1191-1194.
19. Brotchie J. M. Non dopaminergic mechanisms in levodopa-induced dyskinesia. Mov. Disord. 2005; 20: 919–931.
20. Sachdev P. The epidemiology of drug-induced akathisia: part 1. Acute akathisia. Schizophr. Bull. 1996; 21:431-449.
21. Adler L. A., Angrist B., Reiter S., Rotrosen J. Neuroleptic-induced akathisia: a review. Psychopharmacology (Berl.) 1989; 97(1): 1–11. doi: http://dx.doi.org/10.1007/ BF00443404.
22. Poyurovsky M., Weizman A. Serotonin-based pharmacotherapy for acute neuroleptic-induced akathisia: a new approach to an old problem. Br. J. Psychiatry. 2001; 179: 4–8. doi: http://dx.doi.org/10. 1192/bjp.179.1.4.
23. Saddichha S., Kumar R., Babu G. N., Chandra P. Aripiprazole associated with acute dystonia, akathisia, and parkinsonism in a single patient. J. Clin. Pharmacol. 2012; 52(9): 1448–1449. doi: http:// dx.doi.org/10.1177/0091270011414573.
24. Hawthorne J. M., Caley C. F. Extrapyramidal reactions associated with serotonergic antidepressants. Ann. Pharmacother. 2015; 49(10): 1136–1152. doi: http://dx.doi.org/10.1177/1060 028015594812.
25. Anderson H. D., Pace W. D., Libby A. M., West D. R. Valuck, RJ Rates of 5 common antidepressant side effects among new adult and adolescent cases of depression: a retrospective US claims study. Clin. Ther. 2012; 34(1): 113–123. doi: http://dx.doi.o rg/10.1016/ j.clinthera. 2011.11.024.
26. Madhusoodanan S., Alexeenko L., Sanders R., Brenner R. Extra pyramidal symptoms associated with antidepressants a review of the literature and an analysis of spontaneous reports. Ann. Clin. Psychiatry. 2010; 22(3): 148–156.
27. Riesselman A., El-Mallakh R. S. Akathisia with azithromycin. Ann. Pharmacother. 2015; 49(5): 609. doi: http://dx.doi.org/10.1177/ 1060028015570728.
28. Dressler D. Tardive dystonic syndrome induced by the calcium-channel blocker amlodipine. J. Neural Transm. (Vienna) 2014; 121(4): 367–369. doi: http://dx.doi.org/10.1007/s00702-013-1108-8.
29. Asser A., Taba P. Psychostimulants and movement disorders. Front. Neurol. 2015; 6:75. doi:http:// dx.doi.org/10.3389/fneur.2015. 00075.
30. Salem H., Nagpal C., Pigott T., Teixeira A. L. Revisiting Antipsychotic-induced Akathisia: Current Issues and Prospective Challenges. Curr Neuropharmacol. 2017 Jul; 15(5): 789–798. doi: 10.2174/1570159X14666161208153644.
31. Beiske A. G., Loge J. H., Rønningen A., Svensson E. Pain in Parkinson's disease: prevalence and characteristics. Pain 2009; 141: 173 -177.
32. Hanagasi H. A., Akat S., Gurvit H., Yazici J., Emre M. Pain is common in Parkinson's disease. Clin Neurol Neurosurg 2011; 113: 11-13.
33. Ford B, Louis ED, Greene P, Fahn S. Oral and genital pain syndromes in Parkinson's disease. Mov Disord 1996; 11: 421-426.

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34. Djaldetti R., Shifrin A., Rogowski Z., Sprecher E., Melamed E., Yarnitsky D. Quantitative measurement of pain sensation in patients with Parkinson disease. Neurology 2004; 62: 2171-2175.
35. Schestatsky P., Kumru H., Valls-Solé J., Valldeoriola F., Marti M.J., Tolosa E. et. al. Neurophysiologic study of central pain in patients with Parkinson disease. Neurology 2007; 69: 2162-2169.
36. Chudler E. H., Dong W. K. The role of the basal ganglia in nociception and pain. Pain. 1995; 60: 3–38.
37. Giuffrida R., Vingerhoets F. J., Bogousslavsky J. Pain in Parkinson's disease. Rev. Neurol. (Paris) 2005; 161: 407–418. Muntean M. L., Dumbrava L. P. Pain in Parkinson's disease patients. Romanian journal of neurology. 2009; VIII (3); 144-150.
38. Silva E. G., Viana M. A., Barasnevicius Quagliato E.M.A. Pain in Parkinson's disease. Analysis of 50 cases in a clinic of movement disorders. Arq Neuropsiquiatr 2008; 66(1): 26-29.
39. Koller W.C. Sensory symptoms in Parkinson's disease. Neurology. 1984; 34: 957-959.
40. Koller W.C. When does Parkinson's disease begin. Neurology. 1992; 42 (S4): 27-31.
41. Schott G. D. Pain in Parkinson's disease. Pain. 1985: 407-411.
42. Urakami K., Takahashi K., Matsushima E., Sano K., Nishikawa S., Takao T. The threshold of pain and neurotransmitter's change on pain in Parkinson's disease. Jpn. Psychiat. Neurol. 1990; 44: 589-593.
43. Brotchie J. M. Non dopaminergic mechanisms in levodopa-induced dyskinesia. Mov. Disord. 2005; 20: 919–931.
44. Hallett P. J., Standaert D. G. Rationale for use of NMDA receptor antagonists in Parkinson's disease. Pharmacol. Ther. 2004; 102: 155–174.
45. Almeida T. F., Roizenblatt S., Tufik S. Afferent pain pathways: a neuroanatomical review. Brain Res 2004; 1000: 40-56.
46. Millan M. J. The induction of pain: an integrative review. Prog Neurobiol 1999; 57:1-164.
47. Scherder E., Wolters E., Polman C., Sergeant J., Swaab D. Pain in Parkinson's disease and multiple sclerosis: its relation to the medial and lateral pain systems. Neurosci Biobehav Rev 2005; 29: 1047-1056.
48. Willis W. D., Westlund K. N. Neuroanatomy of the pain system and of the pathways that modulate pain. J Clin Neurophysiol 1997; 14: 2-31.
49. Fil A., Cano-de-la-Cuerda R., Muñoz-Hellín E., Vela L., Ramiro-González M., Fernández-de-las-Peñas C. Pain in Parkinson disease: A review of the literature. Parkinsonism and Related Disorders. 2013; 19(3): 285-294.
50. Charbit A. R., Akerman S., Holland P. R., Goadsby P. J. Neurons of the dopaminergic/calcitonin gene related peptide A11 cell group modulate neuronal firing in the trigeminocervical complex: an electrophysiological and immunohis to chemical study. J. Neurosci. 2009; 29: 12532-12541.
51. Sharples S. A., Koblinger K., Humphreys J. M., Whelan P. J. Dopamine: a parallel pathway for the modulation of spinal lo comotor networks. Front. Neural Circuits. 2014; 8:55.
52. Clemens S., Rye D., Hochman S. Restless legs syndrome: revisiting the dopamine hypothesis from the spinal cord perspective. Neurology. 2006; 67: 125-130.
53. Ondo W. G., He Y., Rajasekaran S., Le W. D. Clinical correlates of 6-hydroxydopamine injections into A11 dopaminergic neurons in rats: a possible model for restless legs syndrome. Mov. Disord. 2000; 15: 154-158.
54. Dauvilliers, Y. & Winkelmann, J. Restless legs syndrome: update on pathogenesis. Curr. Opin. Pulm. Med. 2013; 19: 594–600. doi: 10.1097/MCP.0b013e328365ab07.
55. ObesoJ. A., Marin C., Rodriguez-Oroz C., et al. The basal ganglia in Parkinson's disease: current concepts and unexplained observations. Annals of Neurology. 2008; 64(2): 30–46.
56. Sotres-Bayón F., Torres-López E., López-Ávila A., del Ángel R., and Pellicer F. Lesion and electrical stimulation of the ventral tegmental area modify persistent nociceptive behavior in the rat. Brain Research. 2001; 898(2): 342–349.
57. Conte A., Khan N., Defazio G., Rothwell J. C., and Berardelli A. Pathophysiology of soma to sensory abnormalities in Parkinson disease. Nature Reviews Neurology. 2013; 9(12): 687–697.
58. Zarow C., Lyness S. A., Mortimer J. A., and Chui H. C. Neuronal loss is greater in the locus coeruleus than nucleus basalis and substantia nigra in Alzheimer and Parkinson diseases. Archives of Neurology. 2003; 60(3): 337–341.
59. Halliday G. M., Blumbergs P. C., Cotton R. G. Loss of brainstem serotonin- and substance P-containing neurons in Parkinson's disease. Brain. Res. 1990; 510: 104–107.
60. Scatton B., Javoy-Agid F., Rouquier L. Reduction of cortical dopamine, nor adrenaline, serotonin and their metabolites in Parkinson's disease. Brain Res. 1983; 275: 321–328.
61. Szabadi E. Modulation of physiological reflexes by pain: role of the locus coeruleus. Frontiers in Integrative Neuroscience. 2012; 6: Article 94 | 1.
62. Bradley K. Taylor and Karin N. Westlund. The Noradrenergic Locus Coeruleus as a Chronic Pain Generator. J Neurosci Res. 2017; 95(6): 1336–1346. doi: 10.1002/jnr.23956.
63. Voisin D. L., Guy N., Chalus M., Dallel R. Nociceptive stimulation activates locus coeruleus neurones projecting to the soma to sensory thalamus in the rat. J Physiol 2005; 566: 929-937.

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64. Nolano M., Provitera V., Estraneo A., Selim M. M., Caporaso G., Stancanelli A., et al. Sensory deficit in Parkinson's disease: evidence of a cutaneous denervation. Brain 2008; 131: 1903-1911.
65. Braak H., Sastre M., Bohl J. R., de Vos R. A., Del Tredici K. Parkinson's disease: lesions in dorsal horn layer I, involvement of parasympathetic and sympathetic pre- and postganglionic neurons. Acta Neuropathol 2007; 113: 421-429.
66. Pertovaara A. Noradrenergic pain modulation. Prog Neurobiol. 2006; 80: 53-83.
67. Michaud, M., Dumont, M., Selmaoui, B., Paquet, J., Fantini, M. L. & Montplaisir, J. Circadian rhythm of restless legs syndrome: relationship with biological markers. Ann Neurology, 2004; 55:372–380.
68. Hattar, S., Kumar, M., Park, A., Tong, P., Tung, J., et al. "Central projections of melanopsin– expressing retinal ganglion cells in the mouse." J.Comp Neurology. 2006; 497: 326–349.
69. Sandyk R. Pineal melatonin and sensory symptoms in Parkinson disease. Ital. J. Neurol. Sci. 1989; 10(4): 399-403.
70. Trenkwalder C., Hening W. A., Walters AS. Circadian rhythm of periodic limb movements and sensory symptoms of restless legs syndrome. Mov. Disord. 1999; 14:102-110.
71. Zisapel N. Melatonin-dopamine interactions: From basic neurochemistry to a clinical setting. Cell. Mol. Neurobiol. 2001; 21: 605-616.
72. Khuen Yen Ng, Mun Kit Leong, Huazheng Liang, George Paxinos. Melatonin receptors: distribution in mammalian brain and their respective putative functions. Brain Struct Funct. 2017. DOI 10. 1007/s00429-017-1439-6.
73. Srinivasan V, Lauterbach EC, Ho KY, Acuña-Castroviejo D, Zakaria R, Brzezinski A. Melatonin in antinociception: Its therapeutic applications. Curr Neuropharmacol. 2012; 10: 167–178. doi: 10.2174/157015912800604489.
74. Sandyk R. Locus coeruleus-pineal melatonin interactions and the pathogenesis of the "on-off" phenomenon associated with mood changes and sensory symptoms in Parkinson's disease. Int. J. Neurosci. 1989; 49(1-2): 95-101.
75. Heinricher, M. M., Tavares, I., Leith, J. L. & Lumb, B. M. Descending control of nociception: specificity, recruitment and plasticity. Brain Res Rev. 2009; 60: 214–225.
76. Tavares, I. & Lima, D. From neuroanatomy to gene therapy: searching for new ways to manipulate the supraspinal endogenous pain modulatory system." J Anat. 2007; 211: 261–268.
77. Pereira, E. A., Lu, G., Wang, S., et al. Ventral periaqueductal grey stimulation alters heart rate variability in humans with chronic pain. Exp. Neurology. 2010; 223: 574–581.
78. Eduardo E. Benarroch. Periaqueductal gray: An interface for behavioral control. Neurology 2012; 78: 210-217. DOI 10.1212/WNL.0b013e31823fcdee.
79. Gagliese L., Melzack R. Pain in the Elderly. In:Wall and Melzack's Textbook of Pain. McMahon S, Koltzenburg M (Eds.), Churchill Livingstone. Edinburgh. 2006; 1169-1179.
80. Tandberg E., Larsen J. P., Aarsland D., Cummings J. L. The occurrence of depression in Parkinson's disease. A community-based study. Arch Neurol 1996; 53: 175-179.
81. M. Catherine Bushnell, Marta Cheko and Lucie A. Low. Cognitive and emotional control of pain and its disruption in chronic pain. Nature Reviews Neuroscience. 2013; 14(7). doi: 10.1038/nrn3516.
82. Borsook D., Upadhyay J., Chudler E. H., Becerra L. A key role of the basal ganglia in pain and analgesia -insights gained through human functional imaging. Molecular Pain 2010; 6:27.
83. Brefel-Courbon C, Payoux P, Thalamas C, Ory F, Quelven I, Chollet F, et al. Effect of levodopa on pain threshold in Parkinson's disease: a clinical and positron emission tomography study. Mov Disord 2005; 20: 1557-1563.
84. Barad M.J., Ueno T., Younger J., et al. Complex regional pain syndrome is associated with structural abnormalities in pain-related regions of the human brain. J Pain 2014; 15: 197–203.
85. Obermann M., Rodriguez-Raecke R., Naegel S., et al. Gray matter volume reduction reflects chronic pain in trigeminal neuralgia. Neuro image 2013; 74: 352–358.
86. Absinta M., Rocca M. A., Colombo B., et al. Selective decreased grey matter volume of the pain-matrix network in cluster headache. Cephalalgia 2012; 32: 109–115.
87. Bush G., Luu P., Posner M.I. Cognitive and emotional influences in anterior cingulate cortex. Trends Cogn Sci. 2000 Jun; 4(6): 215-222.
88. Leech R., Sharp D. J. The role of the posterior cingulate cortex in cognition and disease. Brain 2014; 137: 12–32.
89. Garcia-Larrea L., Peyron R. Pain matrices and neuropathic pain matrices: a review. Pain 2013; 154(1): 29–43.

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Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

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Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

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It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

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The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

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Tips for writing a good quality Medical Research Paper

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of medical research then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.



6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

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To make a paper clear: Adhere to recommended page limits.



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- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

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Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.



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Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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