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The Study Electro Shock Therapy (EST)

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Abstract- Shock therapy is one of the treatment methods for psychiatric patients, which is associated with a low risk and in financial terms it also benefits the patient and the health system. Mild Electroconvulsive device, which only affects the skin (and not the nervous system), operates on the basis of classical conditioning. EST device has some morphological features including the size and much weight that causes anxiety in the patient. It also has a mechanism that can be fed with 220V. Consequently, the concentration of physician is considerably reduced and also, it causes negative effects on the patient. In behavioral therapy, reducing the patient's anxiety is a very important point that should be taken into consideration. Studying the effect of electroshock therapy on the cognitive state of patients hospitalized in the psychiatric ward showed that shortage and lack of knowledge cause fear and confusion and this, intensifies the cognitive effects that appear after the electroconvulsive therapy. Therefore, it is necessary for the nurses to provide their patients with appropriate and enough information before the implementation of this therapy. In this paper we offer a new device that consists of mild Electroconvulsive system, warning lights, warning voice, and small size and shape which has been designed on the basis of golden rate. Management system of the device is done via remote control and consequently, the patient doesn't experience any anxiety in the course of treatment, rather it increases the performance of attending physician and facilitates the treatment.

Keywords: shock therapy, wrist shock device for the elimination of harmful habits, golden rate, EST system.

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The Study Electro Shock Therapy (EST)

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Abstract- Shock therapy is one of the treatment methods for psychiatric patients, which is associated with a low risk and in financial terms it also benefits the patient and the health system. Mild Electroconvulsive device, which only affects the skin (and not the nervous system), operates on the basis of classical conditioning. EST device has some morphological features including the size and much weight that causes anxiety in the patient. It also has a mechanism that can be fed with 220V. Consequently, the concentration of physician is considerably reduced and also, it causes negative effects on the patient. In behavioral therapy, reducing the patient's anxiety is a very important point that should be taken into consideration. Studying the effect of electroshock therapy on the cognitive state of patients hospitalized in the psychiatric ward showed that shortage and lack of knowledge cause fear and confusion and this, intensifies the cognitive effects that appear after the electroconvulsive therapy. Therefore, it is necessary for the nurses to provide their patients with appropriate and enough information before the implementation of this therapy. In this paper we offer a new device that consists of mild Electroconvulsive system, warning lights, warning voice, and small size and shape which has been designed on the basis of golden rate¹. Management system of the device is done via remote control and consequently, the patient doesn't experience any anxiety in the course of treatment, rather it increases the performance of attending physician and facilitates the treatment.

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I. INTRODUCTION

a) An introduction to the system

Nowadays with the increasing population and the problems of life that create a lot of anxieties and unconsciously affect people, in addition to physical illnesses, they cause some other mental disorders, too. One method of behavior therapy among others is making use of mild electroconvulsive which only affects the skin (not the nervous system), and works merely on the basis of classical conditioning and active conditioning. Active conditioning (which is also known as operant/ instrumental /type II conditioning or trial and error) is some kind of consonant or associative learning. In active conditioning, the animal learns to make relationship between one of its own behaviors and some kind of reward or punishment. An interesting example for making scientifically use of conditioning principles is to create "taste aversion" in jackals for the

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¹ A positive number that in case of addition of a unit to it we will gain its square.

purpose of preventing them from hunting the rural animals (Gustafson et al., 1974). Conditioning "taste aversion" occurs when neutral stimulus (eating a meal) is associated with an unconditional response (becoming ill after eating). Unlike other forms of classical conditioning which require more things to form associations, this kind of conditioning, for example making use of "taste aversion", in fact is generally obtained from one thing. In one case the mutton was injected with a drug that caused nausea. After eating poisoned meat, jackals get away from the sheep instead of attacking on them [10]. And the made device also creates shock on the arms of the patient together with its continuous inappropriate behavior and consequently, an aversion is developed in patient and the device impacts on it.

Electro Shock Therapy (EST) device, whose size is large, and weighs heavy works using 220V. This device has been connected to two electrodes by some wires and it creates shock and also an alarming sound. The keys on the device have been devised in such a manner that the therapeutic doctor should stand beside the patient with his/her hand on the keys. This causes reduction in concentration of the therapeutic doctor and also leaves negative effects on curing the patient. Its another disadvantage is that it cannot be used everywhere and continuous use of the device is not appropriate for the patient.

Curing process takes place through the convulsive electric shock of the device (Electroconvulsive Therapy) using an electric current through the brain. In this approach, through two electrodes that are mounted on the scalp, an electric current with moderate intensity is passed. This electric current which is connected in less than one second, causes a wide shoot in the brain's neurons and creates a state similar to epileptic attacks. After a few minutes, and returning the consciousness, the patient forgets events that have been occurred immediately prior to the shock and after an hour or more, he/she experiences confusion. Continuation of the treatment for three to five times a week causes the patient to feel disorientation – a state that will usually and gradually be recovered after discontinuation of the treatment. Seizures cause many changes in the central and peripheral nervous system. Seizures activate autonomic nervous system. In the 1940s and 1950s, ECT was used to treat all mental disorders including schizophrenia but nowadays, based on extensive research, shock therapy is not mainly used

for patients with severe depression –those who do not respond to antidepressant drugs and commit suicide.

In designing the appearance of the device, golden ratio has been used. Traditionally, this ratio was known as adaptive division and its equivalent amount is about 1.618 (Phi number). One of the properties of this number is that if a unit is subtracted from it, the remainder will be equal to its own reverse. This device functions similar to the electroshock (EST) device, but with more functional features; and this is more helpful and effective in curing disorders such as intellectual and practical obsessions, drug addiction, deviant and inappropriate behavioral habits. Compared with the previous one, the form and mechanism of this device has been changed for the purpose of preventing the anxiety resulting from its appearance and the mechanism that was applied for the patient by EST device, and finally in order to be effective in treatment process.

II. DONE WORKS

By changing the human being's life from simple and primary mode into its complex state, mental disorders also like most other illnesses, is constantly rising [9]. Nausea during chemotherapy is a natural reaction for cancer patients. However, it is seen that sometimes upon entering the treatment room, these patients become nauseated. It has even been seen that at the time when children with cancer is given ice cream prior to chemotherapy, they also become conditional for ice cream at other times and even in case of not being treated with chemotherapy, they begin to vomit after they ate their ice cream [5]. Whenever an ineffective stimulus (e.g., ringing), is given to the animal together with a natural stimulus (for example: food), after sometimes the ineffective stimulus solely causes reaction (for example: Salivation) in animals. This new stimulus is called conditional stimulus; because it can cause behavior to be appeared if and only if there is another stimulus, then it will be called conditioned stimulus; because it will be able to cause the behavior when previous to it, it is along with a natural stimulant. Natural stimulant is called unconditional stimulus. Prior to being conditioned, natural stimulus or unconditional stimulus (US) causes natural or unconditional response (UR). In case of an animal that has been conditional, conditional or ineffective stimulus (CS) also causes conditional response (CR). Each time when CS and US are presented together, it will be called a Try (T). Due to the repeated attempts, the living animal is placed in the path of Acquisition (A); that is, the course during which the animal is associating the two stimuli and creating a relationship between them [5]. On the basis of the time interval of providing conditional and unconditional stimuli, three situations arise:

Simultaneous Conditioning: occurs when two stimulus are presented together and conditional stimulus remains until the beginning of the response.

Delayed Conditioning: offering the conditional stimulus a few seconds before unconditional stimulus; and conditional stimulus remains until the beginning of the response.

Trace Conditioning: offering the conditional stimulus a few seconds before unconditional stimulus; and before offering the unconditional stimulus, stimulus one is omitted.

Repeating the conditional stimulus without the unconditional one, leads to the omission of conditional response and this course has been called **Extinction (E)**.

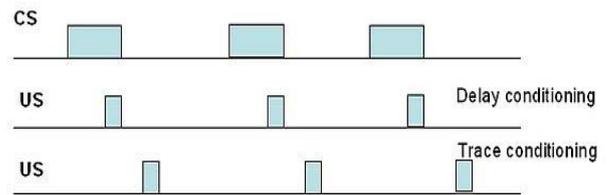


Figure 1: Comparing the Delayed Conditioning with the Trace Conditioning

In both traces of “Learning” and “Extinction”, at the beginning rapid changes are occurred and gradually the rate of changes will be reduced [5]. Nausea during chemotherapy for Cancer Patients is a natural response. But it is sometimes evident that upon entering the treatment room, these patients become nauseated. It has even been seen that at the time when children with cancer is given ice cream prior to chemotherapy, they also become conditional for ice cream at other times and even in case of not being treated with chemotherapy, they begin to vomit after they ate their ice cream [5]. Sometimes, the majority of research units on ECT is weak, most of them also have negative attitudes toward treatment, awareness among households with higher education is better and also, families whose patients have more history of hospitalization and ECT, enjoy better awareness and appropriate attitude in this regard [3]. Given the widespread use of ECT, it is necessary to run the education process in these patients [7]. And in nursing cares, along with providing information, patient is encouraged to express his/her thoughts and feelings about the ECT, and by listening to the patient his / her negative beliefs and fears are studied. Then, they offered the information about the complications of this method and the familiarity of the patient with people who already experienced this treatment and/or - if the patient wishes - he/she closely observe this treatment prior to ECT [8]. Shortage and lack of knowledge, cause fear and confusion; and this intensifies the cognition of the effects after electroconvulsive therapy, therefore, it is necessary for nurses to provide the patients with appropriate and enough information prior to the

implementation of this treatment method [2]. The important point is that in dealing with patients who refer with physical symptoms, sufficient attention to individual and social factors will be effective in incidence of these symptoms. In addition, considering the other associated psychiatric Disorders and timely curing them are of great importance [1].

III. THE INTRODUCTION OF THE PROPOSED SYSTEM

a) An overall View to the System

The designed device functions similar to the electroshock (EST) device, but with more functional features; and this is more helpful and effective in disorders such as intellectual and practical obsessions, drug addiction, deviant and inappropriate behavioral habits. One of the usages of the new device is therapy with warning lights that can be an appropriate alternative for shock.

b) Properties of the Device



Figure 2 : Hemlock Wrist Device Used to Remove Harmful Habits

Modules: RF Transmitter and receiver

Resistance: 5 pieces of 330 ohms, 1 piece of 220kohms, 4 pieces of 4.7kohms, 4 pieces of 10kohms

Chemical Capacitor: 4 pieces of 3.3 micro farad, 1 piece of 47 micro farad, 1 piece of 220 micro farad

Lens Condenser: 2 pieces of 0.1 farad

Diode: 4 pieces of 41481n, 1 piece of 4001n

Light Diode: 8 pieces

Transistor: 4 pieces of 237bc

IC: 3 pieces of PT2272A-M4

Relay: 4 pieces

Shocker: 1 piece

c) Performance of the Device

In behavioral therapy, one of the important causes of anxiety is appearance and mechanism of the device which affects the patient. In designing the new device golden ratio (Phi number) has been used; and results obtained from many scientific and psychological researches show that the most beautiful surfaces and forms from the view point of humans, are those that golden ration has been used in them [4]; and together with the reduction in size and weight for about 5 times, as it is evident in Fig. (2), and with reverse engineering

and analysis of the previous device, we have designed a new circuit which is managed by remote control and is capable of being fed with battery and municipal power which is considerably an important factor in reducing the patient's anxiety. These changes are also effective important factors in increasing the concentration and speed in action of the doctor and leave positive impact on treatment process. The device has been built in a small circuit using the pieces with perfect quality and very cheap price. Therefore, the cost of the device is low and this increases the purchase possibility and using the device because of its very low price. using the device is in a manner that by referring the patient to a psychiatrist for treatment after the doctor diagnosed the disease type, for example nervous twitch (sideway jump of eye) in which the patient cannot control the nervous twitch, this device is connected to the wrist of the person and is lighted. This device includes three means for treatment such as light shock, alarming voice and alarming lights. During the conversation, and upon the recognition that the patient suffers from nervous twitch, psychiatrist pushes the key No. 1 and the red alarming light of the device is turned on. If the patient continues twitching the control key No. 2 is connected and creates an alarming voice to prevent the patient from twitching. After many alarming times, if the patient again continues the twitching, based on the doctor's recognition another light shock which is similar to a painful bite is exerted to the patient's skin; using the key No.4, the shock is increased for the purpose that associating this status (prevention) with what is considered as inappropriate or abnormal behavior (as the conditional stimulus) causes the transmission of feeling prevention and disgust to the conditioned stimulus, and in this way it creates its therapeutic effects. Therefore, avoidance conditioning, aversive therapy, and thought stopping are the most principal methods that this device uses them. The above said techniques are considered as effective means in treatment of disorders such as practical and intellectual obsessions, being addicted to narcotics, digressive and behavioral inappropriate habits and ... Also, a child who learns that assault and violence towards any of his/her brothers or sisters will follow to be punished by parents, will prevent such violence. Operant conditioning will also be activated in such cases. Of course, active conditioning through punishment has also some disadvantages; for example, the individual doesn't learn what to do and results that he/she obtains are not predictable in the same size as offering the reward. Another disadvantage is that it can be led to feeling hate about the person who acts to punish, or about the situation in which the punishment has taken place, and this leads to more destructive effects [6]. Since children are weak-minded than other people, the device has been designed in such a manner that in the first stage, the physician warns the child only through one slight shock, but in the next times since prior to each shock

one red light is turned on, physician can warn the child through only one red light or warning voice for the purpose of preventing the child from tickling and that no negative impact to be exerted to the child. One of the main difficulties in Shock Therapy is low awareness of the patients and fear and anxiety of the device. Upon increase in awareness, complete description and solving the problems the treatment can be more effective.

IV. CONCLUSION

In this research we studied the slight Electroshock EST device concerning the treatment manner, mechanism and the anxiety which is inserted into the patient, and came to the conclusion that creation of anxiety in patient depends on the awareness of the patient as well as the appearance and the mechanism used in the device. Also, mechanism and management of the device is one of the effective factors that impact on the performance of the doctor and leave negative effect on the process of treatment progress in patient. Consequently, in this research beside the omission of the difficulties of the previous device, a new and different device with declaration No. 139350140002002142 has been invented that has many characteristics; and through studying the previous researches and also reverse engineering of the obtained informative device helps the researcher in compiling the process of providing the new device. Unfortunately, in Iran we couldn't have an access to more papers that fully describe the electroconvulsive shock therapy method using the electroconvulsive therapy in conditioning treatment. For this reason, the researcher of this paper proposes that more researches to be done in this regard.

REFERENCES RÉFÉRENCES REFERENCIAS

1. Dibajnia Parvin, Zeinalian Pegah, Zahir al-Din Alireza. A Report on one case of Therapeutic Effect of Electroconvulsive (ECT) in Patients with Conversion Disorders together with Mood Disorder, Journal of Medicine Volume 34, No. 1, Spring 2011, pp. 75-78.
2. Hojjati Hamid, Sharifnia Seiyed Hamid, Mobashsheri Mohsen, Akhoondzadeh Golbahar, Effect of Electroconvulsive Therapy Training on Cognitive Status of Patients Hospitalized in Psychiatry Sector of Panj-e-Azar Hospital of Gorgan, an article published in the Journal of Development and Research in Nursing and Midwifery, Vol. 9, No. 1, Spring and Summer 2012, pp. 16-23.
3. Bokaeeayan Mahdi, Yazdandoost Zahra, Khaleghdoost Tahereh, Voshani Hamidreza Behnam, Ganbari Aatefeh, Farmanbar Rabiollah, Studying the Awareness Level and Attitudes of families of patients with mental disorders who have

had visits from Psychiatric Center of Inn-e-Sina in Mashahd in the field of electroconvulsive therapy, Two Quarterly of School of Nursing and Midwifery of Gilan Province, Year 15, No. 53, Spring and Summer 2005, pp. 15-26.

4. Hoseiniraad, Abdolmajid, Foundations of Visual Arts (Part I). Iran's Textbook publishing company, 2003. p.72.
5. Group of Authors. "Chapter 7: Learning and Conditioning." In Hylgard and Atkinson Psychology. Translators: Translation Group. Fourteenth Edit. Third Print. Tehran: Gap Publication, 2009, pp. 175-179.
6. Group of Authors. "Chapter 7: Learning and Conditioning." In Hylgard and Atkinson Psychology. Translators: Translation Group. Fourteenth Edit. Third Print. Tehran: Gap Publication, 2009, pp. 180-185.
7. Arkan B .Ustun B .Examination of the effect of education about electroconvulsive therapy on nursing
8. Akhoondeh M. Akbarpour F. Hojjati M. shakory H. Sharifnia H, Nazare R. Education effect on consciousness and cognitive status of patients under remedy with Electroconvulsive therapy in the psyche unit of imam reza hospital of amol and yahyanezhad hospital of babol. Journal Midwifery of Nursing & Midwifery Orume. 2011; 9 (2): 61-5.[Persian]
9. Fortinash.KM. and Holodey-worret. PA. psychiatric Mental Health Nursing. StLouise: Mosby.200
10. "Kendra Van Wagne & Pavlove's Dogs", <http://psychology.about.com>

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