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Surgeries and Cardiovascular System



Thoracic Ganglioneuroma

Infection Control in Burn Unit

Highlights

Peripheral Arterial Disease

Pre-Incision to Post-Operative Period

Discovering Thoughts, Inventing Future

VOLUME 22 ISSUE 1 VERSION 1.0

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Infection Control in Burn Unit- Role of Nurses and Other Burn Care Personnel

By Dr. Bhupendra Prasad Sarma, Dr. Kabita S Choudhury & Ms. V S Malingwon

Abstract- *Introduction:* Burn wound infection is the main cause of mortality of burn- injured patients in third world countries. Inadequate infrastructures, paucity of resources, lack of trained manpower, poor personal hygiene are some of the causes of the prevalence of burn wound infection. The Burn Care Team, with the nurse in the pivotal role, contributes a lot in the management and infection control activities.

Materials & Methods: This study is a retrospective analysis and comparison of the results of treatment before and after application of strict infection control measures in a tertiary Burn Care Unit in 6 years. All patients with Burns ranging from 20% to 70% TBSA were included in the study. The data were collected from the format and the records prepared in the burn unit on a day-to-day basis.

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INFECTIONCONTROLINBURNUNITROLEOFNURSESANDOTHERBURNCAREPERSONNEL

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Infection Control in Burn Unit- Role of Nurses and Other Burn Care Personnel

Dr. Bhupendra Prasad Sarma [α], Dr. Kabita S Choudhury [σ] & Ms. V S Malingwon [ρ]

Abstract- Introduction: Burn wound infection is the main cause of mortality of burn- injured patients in third world countries. Inadequate infrastructures, paucity of resources, lack of trained manpower, poor personal hygiene are some of the causes of the prevalence of burn wound infection. The Burn Care Team, with the nurse in the pivotal role, contributes a lot in the management and infection control activities.

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Results: The five bedded burn unit with a total of 187 admitted patients had an overall mortality of 33.5% in the first three years. The cause of death was 84.2% due to septicemia, 5.2% due to ARF, 6% due to burn-shock, and 4.6% due to ARDS. The average bed days of the patients were 35.5days. MDR bacteria like Acinetobacter Boumanii, Pseudomonas Aeruginosa and Klebsiella pneumonae accounted for 88% of the prevalent organisms in burn wounds.

Infection control measures like renovation of the unit to isolate each patient, strict compliance to hand washing and use of protective clothing by the caregiver, use of disposable items, autoclaving of linens and use of antibiotics according to culture-sensitivity reports were strictly imposed. The treatment protocol was also suitably modified. The nurses were responsible for strict compliance with the measures.

Analysis of results in the next three years revealed reduced mortality to 26.4% amongst 333 admitted patients. The causes of death were septicaemia-55%, ARF-16.5%, burn shock – 20.3% and ARDS -8.2%. There wasa substantial reduction in MDR bacteria in wound cultures. The average hospital stay of the patients came down to 24.4 days.

Conclusion: It was concluded that strict compliance to infection control measures could reduce burn wound infection and consequent mortality and morbidity of burn patients.

I. Introduction

Infection of the burn wounds is the leading cause of mortality and morbidity in burns. Inadequate infrastructures, paucity of resources, lack of trained manpower, poor personal hygiene are some of the causes of the prevalence of burn wound infection. 75% of all deaths in burns exceeding 40% TBSA is due to burn wound infection. Hence infection remains one of the most challenging concerns for the burn team. The importance of preventing infection has been recognized by organized burn care units and hence strict antiseptic and aseptic measures have been followed. This included use of sterile gloves and dressing materials, wearing masks for dressing changes, and separation of patients, either using separate rooms or cubicles[1]. The development of infection depends on the presence of conditions, like- a source of organisms, a mode of transmission, and the susceptibility of the patient. Sources of organisms are found in the patient's own endogenous flora, from exogenous sources in the environment, and from the burn care personnel. The burn wound represents a susceptible site for opportunistic colonization by organisms of endogenous and exogenous origin. Patient factors such as age, the extent of injury, and depth of burn, in combination with microbial factors such as type and number of organisms, enzyme and toxin production, and motility determine the likelihood of invasive burn wound infection [2]. The burn wound is initially colonized predominantly with gram-positive organisms, which are replaced within a week by antibiotic-susceptible gram-negative organisms. If wound closure is delayed, infection is inevitable, requiring treatment with broad-spectrum antibiotics. This results in infection by yeasts, fungi, and antibiotic-resistant bacteria. The principal defenses of the patient against infection: namely, physical defenses, nonspecific immune responses, and specific immune responses may be altered by the use of invasive devices, such as endotracheal tubes, intravascular catheters and urinary catheters, and lead to patient's susceptibility to infection.[1] Incidence of infection is also affected by the size of the patient's burn injury.

In the last two decades, much progress has been made in the control of burn wound infection and nosocomial infections (NI) in severely burned patients. The continually changing epidemiology is partially related to greater understanding of and improved techniques for burn patient management as well as effective hospital infection control measures. With the advent of antimicrobial chemotherapeutic agents, infection of the wound site is now not as common as, for example, urinary and bloodstream infections. Universal application of early excision of burned tissues has made a substantial improvement in the control of wound-

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related infections in burns. Additionally, the development of new technologies in wound care have helped to decrease morbidity and mortality in severe burn victims [3]

Infection of the burn wound may result in permanent scarring, disfigurement and disability These can have serious personal and financial implications for both the burn victim and their dependents.[4]

Empiric antimicrobial therapy to treat fever should be discouraged because burn patients often have fever secondary to the systemic inflammatory response to burn injury. Prophylactic antimicrobial therapy is recommended only for coverage of the immediate perioperative period of excision or grafting of the burn wound to cover the risk of transient bacteremia.

Burn wound infection is the main cause of mortality of burn-injured patients in third world countries. The Burn Care Team, with the nurse in the pivotal role, contributes a lot in the management and infection control activities. The present study was done in a tertiary care, 5 bedded burn unit at NEMCARE Hospital, Guwahati, located in the North Eastern part of India. The unit being small, with inadequate space and trained manpower, there was high infection rate with consequent increased morbidity and mortality of the burn patients. The burn unit was then renovated, increasing the number of beds to 10 and making it more spacious with isolated beds. The number of resident doctors, nurses and paramedics were also increased, along with the provision of intense in-house training on modern management protocol on burns and best practices on infection control. Strict antiseptic and aseptic measures were implemented with the provision of barrier nursing of the infected cases. The measures proved useful with decrease in infection rate and improved result of treatment. The aim of our study was to find out the overall morbidity and mortality pattern vis-a-vis the infection rate of the burn patients treated in a specified period. We also wanted to compare the infection rate, morbidity and mortality before and after renovation and application of strict aseptic measures in the burn unit.

II. Materials & Methods

This study was a retrospective analysis and comparison of the results of treatment before and after application of strict infection control measures in the tertiary Burn Care Unit in a period of 6 years. To compare the results of treatment before and after renovation of the burn unit, the period was divided into two blocks- Block A- from January 2014 to December 2016- before renovation and Block B- January 2017 to December 2019- after renovation and implementation of strict antiseptic measures. In Block A, all types of burn-injured patients were treated in the unit with standard protocols-fluid resuscitation was done by using Parkland formula, burn wounds were treated by closed dressing with 1% Silver Sulphadiazine and collagen or by using newer wound covers like Collagen sheet, Silver Ion dressing and Nano-Crystalline Silver dressing, depending on the type and nature of the wound. A broad-spectrum systemic antibiotic, mostly of second-generation cephalosporin group, was used prophylactically in all cases. Early excision and skin grafting was also done in selected cases (below 50%TBSA burn) with full- thickness burns. In Block B, the standard protocol of resuscitation remaining same, the burn wound covers were used more frequently. A major deviation in the protocol in this block was, discontinuation of prophylactic systemic antibiotic cover in all fresh burn cases. Systemic antibiotics were reserved only for perioperative cases and those having positive bacterial cultures. Early Excision and Skin Grafting was done in most of the cases with full-thickness burns upto 60% TBSA. Wound swabs were taken for culture and sensitivity on day 1,7,14 and 21 days or more frequently depending upon the nature of the wounds. Blood, urine, sputum, central venous catheter tip or urinary catheter tips were sent for culture and sensitivity tests, depending upon the types of symptoms and system involvement in both the Blocks.

The burn unit recorded all relevant treatment data in a format, which was kept in the patients' bed tickets. The information was then computerized to make a database for each patient. The relevant data were collected from the computerized database of the admitted patients in the burn unit during the said period.

The study included 520 patients in 6 years. The inclusion criteria were (i) Patients with 20% to 70% TBSA burn, (ii) Patients between 10 and 70 years of age (iii) patients having no serious comorbidities. All patients in extremes of ages and with serious comorbidities, like uncontrolled diabetes, severe hypertension, heart disease, liver disease and renal failure were excluded from the study.

The study was approved by the Hospital Ethical Committee.

III. Data Analysis

Data was entered and analyzed in R Studio software version 1.4.1717 for windows. For the difference in categorical variables, the Pearson Chi-square (χ^2) test was used. A value of $P<0.05$ was considered statistically significant. For data analysis, mean and SD were used as descriptive statistics. As the number of patients was different in two blocks, we have taken for analysis a sample size of 100 for each block.

IV. Results

A total of 520 patients were included in the study period; 230 of them were males and 290 were females. In Block A-the first three years before

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renovation had 187 patients, 111 females and 77 males and in Block B- the next three years after renovation and application of strict aseptic measures - had 333 patients; 179 females and 154 males (Fig I). Out of included group of patients, the majority i.e., 309 numbers (59.4%) of patients were in the age group of 19 to 40 years. The mean age and standard deviations were 34.73 years& 13.86 for Block A and 33.67 years & 14.04 for Block B respectively (Table I). While analyzing the percentage of TBSA burn, it was evident that, in Block A, there were 110 (58.8%) patients with 20-40% &77 (41.1%) with 41-70% TBSA burn and in Block B, there were 182 (54.5%) with 20-40% and 151 (45.3%) with 41-70% burn (Fig II). Analysis of cases on the day of admission revealed that, there were 350 (67.3%) fresh and non-infected patients, 125 (24.0%) mildly infected patients and 45 (8.6%) patients with invasive infections, in the series. There were no significant variations in the number of non-infected and infected patients in the two blocks (Table II). Analysis of methods of treatment used revealed that, 45.4% patients in Block A and 47.1%in Block B were treated with newer burn wound covers, 11.7% patients in Block A and 6.0% patients in Block B were dressed with 1% Silver Sulphadiazine+ Collagen cream; while a somewhat increased number of patients were treated with Early Excision and Skin Grafting in Block B (38.1% in Block B and 27.8% patient in Block A). The methods of treatment in both the blocks were almost the same as the differences were not statistically significant (Table III).

a) Infection

Analysis of organ dysfunction due to infection revealed that though there was no significant difference in incidence of wound infection, UTI and pneumonia, incidence of septicemia showed significant reduction (P=0.04) in Block B (15.0%) compared to Block A (28.3%). The total number of patients showing organisms on cultures were 122 (63.5%) in Block A and 180 (54.0%) in Block B; depicting a decrease in infection rate in later period (though not statistically significant: P= 0.38) (Table IV). Going through the types of organisms isolated in cultures, it was evident that 282 (93.3%) of them were Gram-negative bacteria. Only 17 (5.6%) were Gram-positive bacteria and 3 (0.9%) were fungi (Candida albicans). Out of the Gram-negative bacteria, 251 (83.1%) were Acinetobacter Boumanii, Pseudomonas Aeruginosa and Klebsiella Pneumonae. Similar types of organisms were detected in both the Blocks (Fig III).

b) Mortality

In the entire period of our study, out of a total of 520 patients, 151(29.0%) patients died. Though statistically not significant, the overall percentage of death in Block B was less (88 patients died out of 333 i.e., 26.4%) than that of Block A (63 patients died out of 187 i.e., 33.5%). The analysis of causes of death revealed that there was a significant reduction (P=0.01) of death from septicemia in Block B (55.0%) in comparison to Block A (84.3%). Due to a greater number of extensive burns in Block B, there were a significant increase in the percentage of death due to burn shock (20.3% in Block B & 6.0% in Block A) and acute renal failure (16.5% in Block B & 5.2% in Block A) (Table V). The analysis of number of deaths according to the percentage of TBSA burns revealed that there was a significant reduction (P = 0.014) of death of patients having 20-40% burns in Block B(15 numbers- 4.5%) in comparison to Block A(33 numbers- 17.5%) (Table VI).

c) Morbidity

Analysis of the hospital bed days occupancy by the patients in both the blocks revealed that 66.7% of patients stayed beyond two weeks in Block A, while 43.5% of patients only stayed beyond two weeks in Block B. Though not statistically significant, the average bed day occupancy of the patients in Block B was less (24.5 days), compared to that of Block A(35.5 days) (Table VII).

V. Discussion

Burn wound infection (BWI) in the burn care unit is the primary cause of mortality and morbidity of burn patients. The increased number of hospital bed-day occupancy due to infection, leads to the increase in the cost of treatment. BWI is more prevalent in the environment, which is overcrowded, with poor air circulation and without facility for isolation of the patients. Poor personal hygiene of the burn care personnel and the patients are added factors in acquiring BWI. In one of the studies by Peck M D etal it was inferred that, burned patient is at a high risk for nosocomial infection (NI) as a result of the nature of the burn injury itself, the immune-compromising effects of burns, prolonged hospital stays and intensive diagnostic and therapeutic procedures [5]. In our study also environmental and human factors resulted in increased infection rates in the first three years. Increased infection rate was also responsible for high mortality of patients with 20-40% TBSA burn in Block A, though there wasa greater number of patients (58.8%) with relatively less areas of burns in this group. This fact is in contrast to a study done in a tertiary care burn unit in Northern India, where it was found that the mortality was related to the percentage of TBSAburn. Thirteen out of 18 patients who had TBSAburn more than 60% died as compared to 5 out of 31 with TBSA burn less than 40% in their study [6]. Though, around 66% of fresh cases, without infection, reported in both the blocks in our study, the infection rates and death due to septicemia was found to be more in Block A than those of Block B. The reduction of the number of death due to septicemia in Block B was the result of implementation of strict aseptic measures by the burn care personnel. This statement

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conforms with the study done in Northern India by Neelam Taneja et al. They stated that better compliance with handwashing and barrier nursing techniques, stricter control over disinfection and sterilization practices and usage of broad-spectrum antibiotics, and reduction of the environmental contamination with S. aureus is required to reduce the HAI rates [6].

The reduction of multidrug-resistant organisms and the infection rates in Block B, in our study, was the result of a limitation of the use of prophylactic antibiotics. This fact was corroborated by Gerner J S et al. who suggested that the burn surgeons should minimize the use of prophylactic antimicrobial agents and apply standardized written criteria, such as those developed by the CDC and by Garner et.al [7]. Joan M Weber also stated that systemic antimicrobial treatment must be thoughtfully considered in the care of burn patients to prevent the emergence of resistant organisms. The burn wound will always be colonized with organisms until wound closure is achieved. Administering systemic antimicrobials will not eliminate this colonization, but promote the emergence of the resistant organisms. If antimicrobial therapy is indicated to treat a specific infection, it should be tailored to the specific susceptibility patterns of the organisms as soon as this information is available [8].

Different types of the burn wounds were covered by new wound covers like Collagen sheet, Silver Ion dressing and Nano-Crystalline Silver dressing, in almost equal number of cases, in both blocks. But an increased number of cases were treated with Early Excision and Skin Grafting in Block B, resulting in the reduction of the infection rate and mortality, in our study. This fact has been corroborated bya number of studies on the subject, which stated that 'Early burn wound excision, performed within the first few days after burn injury, resulted in improved survival and infection control in severely burned patients.'[9,10,11].

In our study, the wound swab cultures revealed the majority (93.3%) of Gram-negative bacteria– Pseudomonas Aeruginosa heading the list, followed by Acitobacter Boumanii, Klebsiella Pneumonae and E-Coli. We had a smaller number of Staphylococcal infection, but and no streptococcus infection in our study. This finding is somewhat in conformity with the study of OOncul et.al. who had Pseudomonas aeruginosa (57%), Acinetobacter Boumanii (21%) and Staphylococcus aureus (14%) as the most common resistant organisms isolated [12]. Pia Appelgren et.al. had different findings in their study- themost common micro-organisms were the coagulase-negative staphylococci and methicillin-sensitive Staphylococcus aureus in their series [13]. Neelam Taneja et al also had Staphylococcus aureus, Pseudomonas aeruginosa and β-hemolytic streptococci (BHS) as the most frequent organisms causing hospital-acquired infection [6].

The cause of mortality of the majority of the patients in our study was septicemia, though the percentage was more (84.2%) in Block A than Block B (55%). Tancheva Det al. had similar findings in their study, where approximately 73 % of all deaths within the first 5-day post-burn is shown to be directly or indirectly caused by septic processes [14]. The average hospital days (length of hospitalization) of the patients in block B was less (24.5days) in comparison to Block A(35.5 days), because of lower rate of infection in Block B in our study. This result of our study is in line with the findings of O Oncul et, al. They stated that, the mean age (38 +/- 21 yr), the mean length of hospitalization (45.06 +/- 11.67 days) and the total burned surface area (TBSA) (34.58 +/- 18.46%) of the patients with NI (Nosocomial Infection) were higher than those of the patients with non-NI (23 +/- 17 yr), (16.38 +/- 11.14 days) and (12.44 +/- 8.69%) (P=0.03, P=0.001, P=0.01) respectively [12].

VI. Conclusion

Burn wound infection is the main cause of mortality of burn injured patients in the third world countries. Inadequate infrastructures, paucity of resources, lack of trained manpower and poor personal hygiene are the multiple factors, which contribute to its occurrence and perpetuation. Thoughtful planning to eliminate these factors can reduce the incidences of burn wound infection to a large extent. The active involvement of the burn care personnel in strict compliance to infection control measures can reduce burn wound infection and consequent mortality and morbidity of burn patients.

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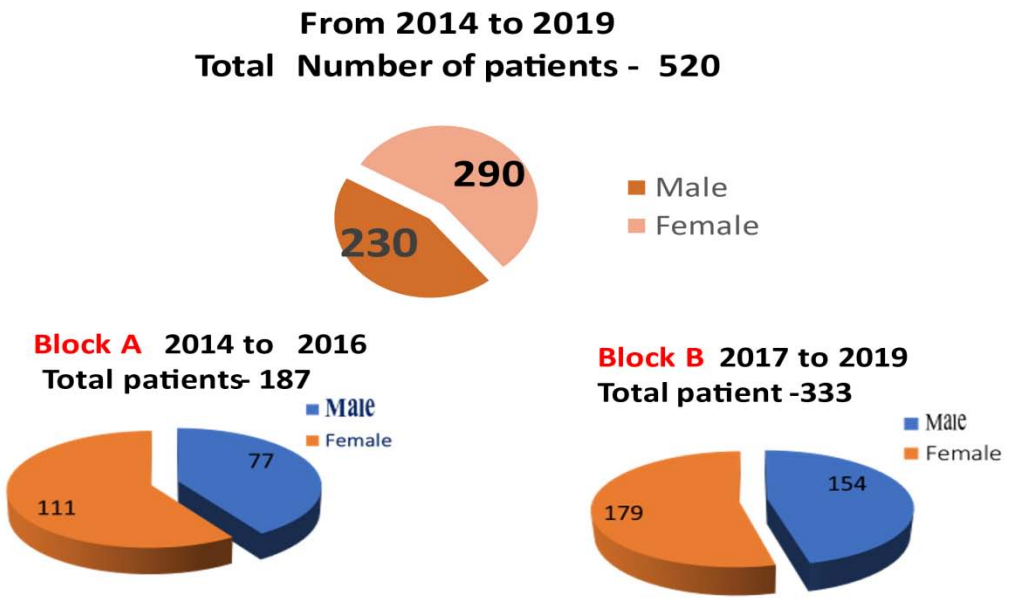


Fig I

Table I

Age of patients in different Blocks

Block	10-18 Yrs	19-30 Yrs	31-40 Yrs	41-50 Yrs	51-60 Yrs	61-70 Yrs	Total
2014-2016 Block A	21	53	65	20	15	13	187
2017-2019	54	87	104	42	29	17	333

			Block B				
44	30	520	2014-2019	75	140	169	62

Mean age- 34.73 years and SD 13.86 in Block A Mean age -33.67 years & SD -14.04 in Block B

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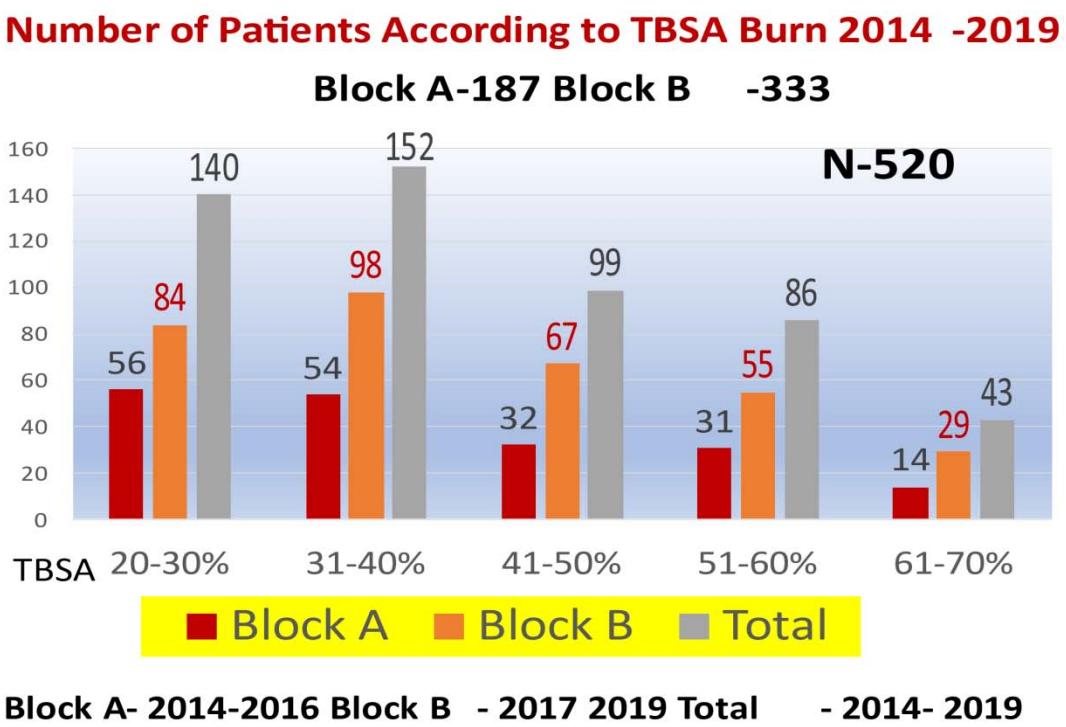


Fig II

Table II

Number of Fresh and Infected patients on admission day

Block	Fresh cases	Mildly infected	Invasive infection	Total
2014-2016	124	52	11	187
Block A	66.0%	28.0%	6.0%	
2017-2019	226	73	34	333
Block B	68.0%	22.1%	10.0%	
2014-2019	350	125	45	520
Overall	67.3%	24.0%	8.6%	

Figures in the parentheses show row-wise percentages

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Table III

Methods of treatment

Block	Dressing with SS D + Collagen cream	Use of Burn wound covers			Early Excision & Skin-grafting	Combined methods	Total
		Collagen sheet	Silver Ion dressing	Nano-cryst. Silver dressing			
2014-2016 Block A	22 11.7%	41 21.9%	32 17.1%	12 6.4%	52 27.8%	28 14.9%	187
2017-2019 Block B	20 6.0%	69 20.7%	57 17.1%	31 9.3%	127 38.1%	29 8.7%	333
Chi Squared P value	1.836 0.175	0.033 0.8541	0 1	0.535 0.464	1.61 0.205	1.6288 0.202	
2014-2019 Overall	42 8.0%	110 21.1%	89 17.1%	43 8.2%	179 34.4%	57 10.9%	520

Figures in the parentheses show row- wise percentages

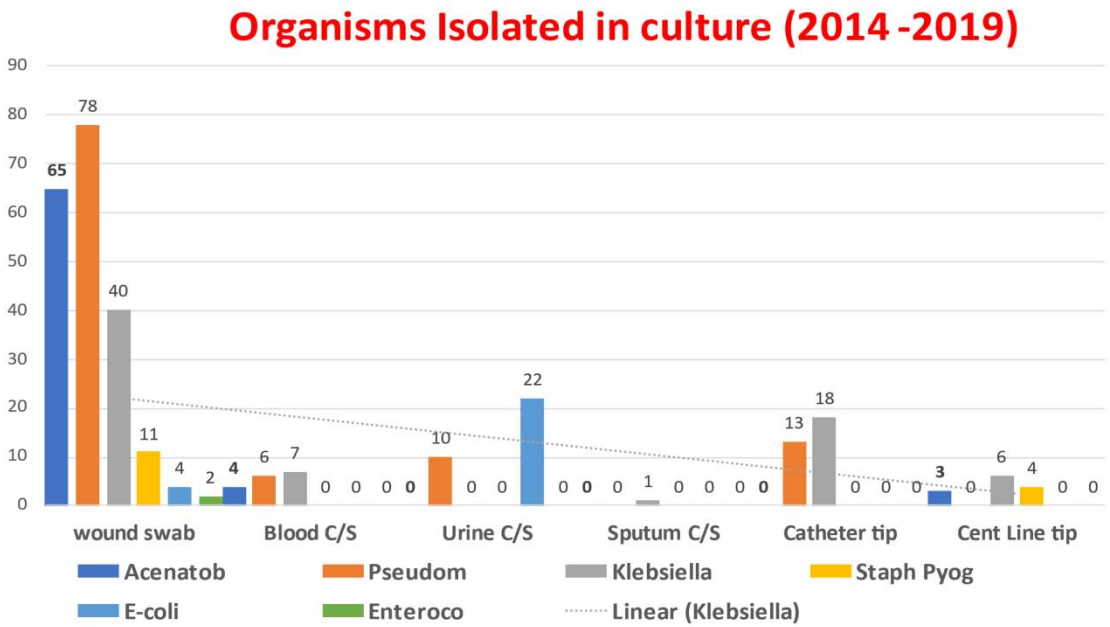
Table IV

Infection causing organ dysfunction

Block	Wound Infection	Septicaemia	UTI	Pneumonia	Total Infected patients
1914-1916 **Block A**	28 **14.9%**	53 **28.3%**	34 **18.1%**	7 **3.7%**	122 (63.5%) **(Out of 187)**
1917—2019 **Block B**	49 **14.7%**	50 **15.0%**	52 **15.6%**	29 **8.7%**	180 (54.0%) **(Out of 333)**
Chi Squared P-Value	0.001 0.97	4.09 0.04	0.19 0.67	2.02 0.16	0.77 0.38
2014-2019 **Overall**	141 46.6%	106 35.0%	54 17.8%	1 0.3%	302 (58.0%) (Out of 520)

Figures in the parentheses show row- wise percentages

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Gram-ve Org. – 282 (93.3%) Gram +ve Org.- 17 (5.6%) Candida - 3 (0.9%)

Acinatobacter+ Pseudomon + Klebsiella – 251 (83.1%)

Fig III

Table V

Causes of Death

Block	Septicemia	Burn Shock	Acute Renal Failure	ARDS	Total Death & PC
1914-1916 **Block A**	53 84.2%	4 6.0%	3 5.2%	3 4.6%	63 33.5%
1917—2019 **Block B**	48 55.0%	18 20.3%	14 16.5%	7 8.2%	88 26.4%
Chi Squared	6.125	7.775	5.884	1.012	0.842
P-Value	0.01	0.005	0.01	0.314	0.359
2014-2019 **Overall**	99 65.3%	23 15.0%	19 12.5%	10 6.9%	151 29.0%

Figures in the parentheses show row-wise percentages

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Table VI

Number and Death According to Percentage of Burns

Block		20-30%	31-40%	41-50%	51-60%	61-70%	Total
2014-2016	Number	56	54	32	31	14	187
Block A	Death	8 4.2%	25 13.3%	11 5.8%	10 5.3%	9 4.8%	63 33.5%
2017-2019	Number	84	98	67	55	29	333
Block B	Death	4 1.2%	11 3.3%	18 5.4%	36 10.8%	19 5.7%	88 26.4%
Statistical Analysis	Chi Squared	1.667	6.024	0.014	1.878	0.077	0.841
	P value	0.196	0.014	0.905	0.1705	0.781	0.359
2014-2019	Number	143	149	99	86	43	520
	Death	12	36	29	46	28	151

Figures in the parentheses show row-wise percentages

Table VII

Hospital Bed Days in two Blocks

Block	Hospital Days	TBSA Burn 20-40%	TBSA Burn 41-60%	TBSA Burn 61-70%	Total No. Patients	Percentage	Average Bed Days
	<7 days	14	6	0	20	10.6%	
	8-14 Days	24	15	3	42	22.4%	
Block A	15-30Days	32	26	5	63	33.6%	35.5 DAYS
	>30 Days	40	16	6	62	33.1%	
	TOTAL	110	63	14	187		
	<7 Days	35	10	5	50	15.0%	
Block B	8-14 Days	68	64	6	138	41.4%	24.4 DAYS
	15-30 Days	61	29	16	106	31.8%	
	>30Days	18	19	2	39	11.7%	
	TOTAL	183	123	29	333		

$\chi 2 = 2.057$ P = 0.1515

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Urothelial Carcinoma Associated with Infective Endocarditis Due to a Leuconostoc Species: A Rare Presentation

By Dr. S. Abouradi M.D, Dr. S. Ejjebli M.D, Dr. K. Chawki M.D & A. Drighil M.D

Introduction- Infective endocarditis (IE) is commonly caused by the hematogenous spread of various microorganisms that target the endocardium with staphylococci and streptococci accounting for the majority of cases. Due to the multitude of bacterial and even fungal pathogens, treatment options should be targeted specifically against microorganisms that are isolated in blood cultures. If an empiric antibiotic therapy is warranted, first-line treatment usually targets methicillin susceptible and resistant staphylococci, streptococci, and enterococci. Although there is an important caveat, clinicians must consider when using vancomycin antibiotic therapy.

Leuconostoc is a genus of gram-positive bacteria, placed within the family of Lactobacillaceae, this type of bacteria, which can be found in green vegetables and are used in wine, cheese, and sugar production, is an uncommon cause of disease in human beings(1); these microorganisms have only recently been recognized as a potential cause of infection in a variety of patient populations(2)

GJMR-I Classification: NLMC Code: WP 460



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Dr. S. Abouradi M.D [α], Dr. S. Ejjebli M.D [σ], Dr. K. Chawki M.D [ρ] & A. Drighil M.D [ω]

I. Introduction

Infective endocarditis (IE) is commonly caused by the hematogenous spread of various microorganisms that target the endocardium with staphylococci and streptococci accounting for the majority of cases. Due to the multitude of bacterial and even fungal pathogens, treatment options should be targeted specifically against microorganisms that are isolated in blood cultures. If an empiric antibiotic therapy is warranted, first-line treatment usually targets methicillin susceptible and resistant staphylococci, streptococci, and enterococci. Although there is an important caveat, clinicians must consider when using vancomycin antibiotic therapy.

Leuconostoc is a genus of gram-positive bacteria, placed within the family of Lacto-bacillaceae, this type of bacteria, which can be found in green vegetables and are used in wine, cheese, and sugar production, is an uncommon cause of disease in human beings(1); these microorganisms have only recently been recognized as a potential cause of infection in a variety of patient populations(2)

When dealing with IE caused by Leuconostoc, vancomycin is not a suitable option for treatment. Leuconostoc is catalase-negative, produces lactic acid, and is characterized by its intrinsic and chromosomal resistance to vancomycin. (2,3,4). It was previously believed that this bacterial species was non-pathologic in nature until recently published reports revealed the infectious potential of the Leuconostocspecies in many patient populations (5,6).

II. Case Report

We report the case of a 60 years old male, with a medical history ofnasopharyngeal carcinoma 26 years ago treated by chemotherapy and radiotherapy complicated with hypothyroidism under levothyroxine, our patient was diagnosed with a right renal urothelial carcinoma (UC) 2 years ago that was treated with surgery, an end stage kidney failure undergoing dialysis twice a week using a tunneled central venous catheter that was placed 3 years ago and a deafness caused by an operated cholesteatoma.

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The patient was admitted in the cardiology department for significant weight loss associated to nausea, vomiting, dyspnea, total hematuria and episodic fever (39°C) for the last 2 months. The medical examination revealed a conscious patient with a blood pressure of 100/64 mmHg, heart rate of 113bpm, temperature of 38.5 C, respiratory rate of 18cpm, and oxygen saturation of 97% on room air. The cardiovascular examination found a grade IV/VI systolic and diastolic murmurs, no Janeway lesions or Osler nodes were found.

Complete blound count found an anemia with a hemoglobin rate at 5g/dl, white blood cell count (WBC) at 18,000/ ml, C-reactive protein (CRP) elevated at 104 mg/dl, Procalcitoninat1, erythrocyte sedimentation rate (ESR) was 48 mm, creatinine (Cr) 40.6 mg/dl, with a GFR of 15 ml / min / m^2; a positive rheumatoid factor, hypothyroidism with a pituitary thyroid stimulating hormone at 100mUI/l.

The EKG showed an incomplete left bundle branch block with noanginal symptoms, transthoracic echocardiography (TTE) showed a mitral valve with calcified leaflets, moderate mitral regurgitation (Fig.1), severe mitral stenosis with a valve area of 1.5cm2, and a mobile vegetation measuring 14x6 mm on A2 part of the anterior mitral valve (Fig 2 and 3). We also observed a tricuspid aortic valve with calcified leaflets and reduced cusp separation, moderate aortic regurgitation, moderate aortic stenosis with a valve area of 1.2 cm2. The left ventricular size was within normal limits and the left ventricular ejection fraction was 63%. Transoesophageal echocardiography (TEE) showed a 16x8 mm mitral vegetation .An empirical antibiotic therapy was initiated after the collection of recipient blood samples for culturing.

Leuconostoc species grew in 2 out of 2 blood cultures. Antibiotic treatment was adapted to the antibiogram with ceftriaxone and gentamicin. A cranial and Thoracoabdomino pelvic scan were realized and revealed an occipital ischemic injury, bilateral mild pleural effusion, metastatic damage to the liver, bladder tumor occupying all the lumen measuring 59x56x49mm and a mild peritoneal effusion.

Considering the results of imaging studies, clinical findings and blood tests, a diagnosis of infective endocarditis due to leuconostocspp was established.

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The patient received intravenous antibiotic therapy consisting of ceftriaxone 2g and gentamycin adapted to renal function.

The Nephrologyteam was consulted to assist in the management of the patient's chronic kidney disease. Throughout the patient's hospitalization, his tunneled central venous catheter was removed and the patient received a transfusion of 4 blood bags per-dialysis because of his severe anemia with a control of hemoglobin at 9.5g/dl.

During his hospitalization, the patient had a transurethral endoscopic bladder resection of his mass that revealed a secondary extension of his primary renal cancer.

Otherdepartments took part in the management of our patient, endocrinology with the adaptation of doses of L-thyroxin and Oncology team who pronounced that his cancer is in a late stage and decided for a palliative chemotherapy after treatment of his actual endocarditis.

2 months after his discharge from cardiology department, a palliative chemotherapy was decided by oncologists but the patient died from a severe hematuria before starting his chemotherapy.

III. Discussion

This case reports a story of a cancer patient afflicted by a complicated course of infective endocarditis with an uncommon organism: leuconostocspp. What had initially been described as a nagging headache, quickly developed into what we now know to be Leuconostoc species bacteremia from seeded aortic valves. In evaluating what may have led to this patient's eventual clinical course, it is imperative to note all predisposing factors. Our patient had a history of nasopharyngeal cancer, a renal carcinoma and a chronic renal failure undergoing dialysis with a persistent central venous catheter that was never changed and kept over 3 years, all of those factors had placed our patient at an extremely elevated risk for infective endocarditis. This case is interesting because the pathogenic bacterial species for IE are typically staphylococci and streptococci, not Leuconostoc species.(1)

Until 1985, Leuconostocs were known as ''nonpathogenic to plants and animals''. However, due to continued reports of different infections, they are currently recognized as opportunistic pathogens affecting patients with a wide spectrum of underlying diseases; Still the portal of entry remains uncertain. One possibility is their introduction into the blood stream during catheter implantation, which could explain the case of our patient, another portal of entry is the gastrointestinal tract due to the natural habitat of Leuconostoc in food, which would explain the association with underlying gastrointestinal disease and frequent gastrointestinal symptoms.(7)

Leuconostoc is a genus of Gram-positive, catalase and oxidase negative, chain forming ovoid cocci placed within the family of leuconostocaceae (1,5,8). This bacterial species was thought to be non-pathologic until recently published reports have revealed theirinfectious potential in immunocompromised and severely ill patients. IE with Leuconostoc species can be troubling considering they are hetero-fermentative and potentially "slime" (dextran and sucrose producing) forming. (9,10).

High-level resistance to vancomycin is nearly a constant in Leuconostoc species. Reports suggest the involvement of a chromosomal factor, which leads to a change in the end of a pentapeptide in the cell wall. This vancomycin binding side usually ends in alanine-alanine, but in Leuconostoc species it ends in alanine-lactate. Another possibility, as in Enterococci, is the production of a new membrane protein codified by plasmids(11).

Concerning treatment, multiple studies showed that the complete elimination of most bacterial pathogens of endocarditis needs two to four weeks of monotherapy, so we opted to treat our patient for six weeks following the American Heart Association (AHA) guidelines for treatment of penicillin-resistant bacteria in a high-riskpatient (12,15). Additionally, the AHA advises that daptomycin alone is not effective against multidrug resistant IE and should be used in combination with other agents (12). Upon further review of the available literature on Leuconostoc species infection, several studies listed daptomycin as an effective treatment for Leuconostoc-associated bacteremia (13). Considering our patient had anuncommon bacteria and an aortic valve vegetation, we pursued a full six-week course of an intravenous antibiotic therapy. As published reports do show effective therapy of penicillin-resistant group viridians streptococci with combination therapy, typically ceftriaxone or penicillin with gentamycin (14,15), our team opted for empiric treatment with ceftriaxone associated to gentamycine.

IV. Conclusion

Infective endocarditis can prove to be a threatening disease when left untreated also if caused by a new organism. It is critical for clinicians to be aware of the many pathogenic organisms, including Leuconostoc species, and appropriate management strategies in order to avoid different complications that may ensue. It is also clear that a higher index of suspicion must be maintained in patients with multiple predisposing factors such as the patient in the case presented.

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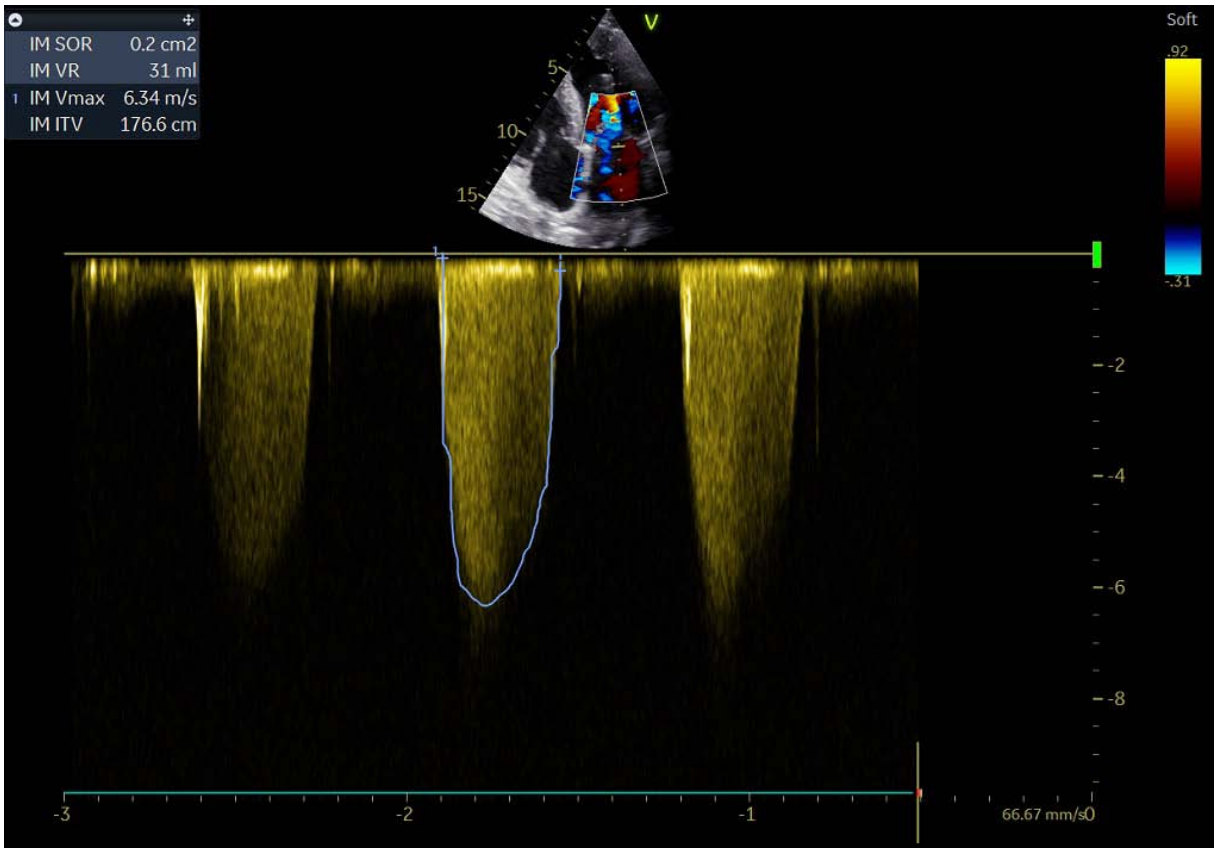


Figure 1: Moderate mitral regurgitation



Figure 2: The mitral vegetation measuring 6*13mm

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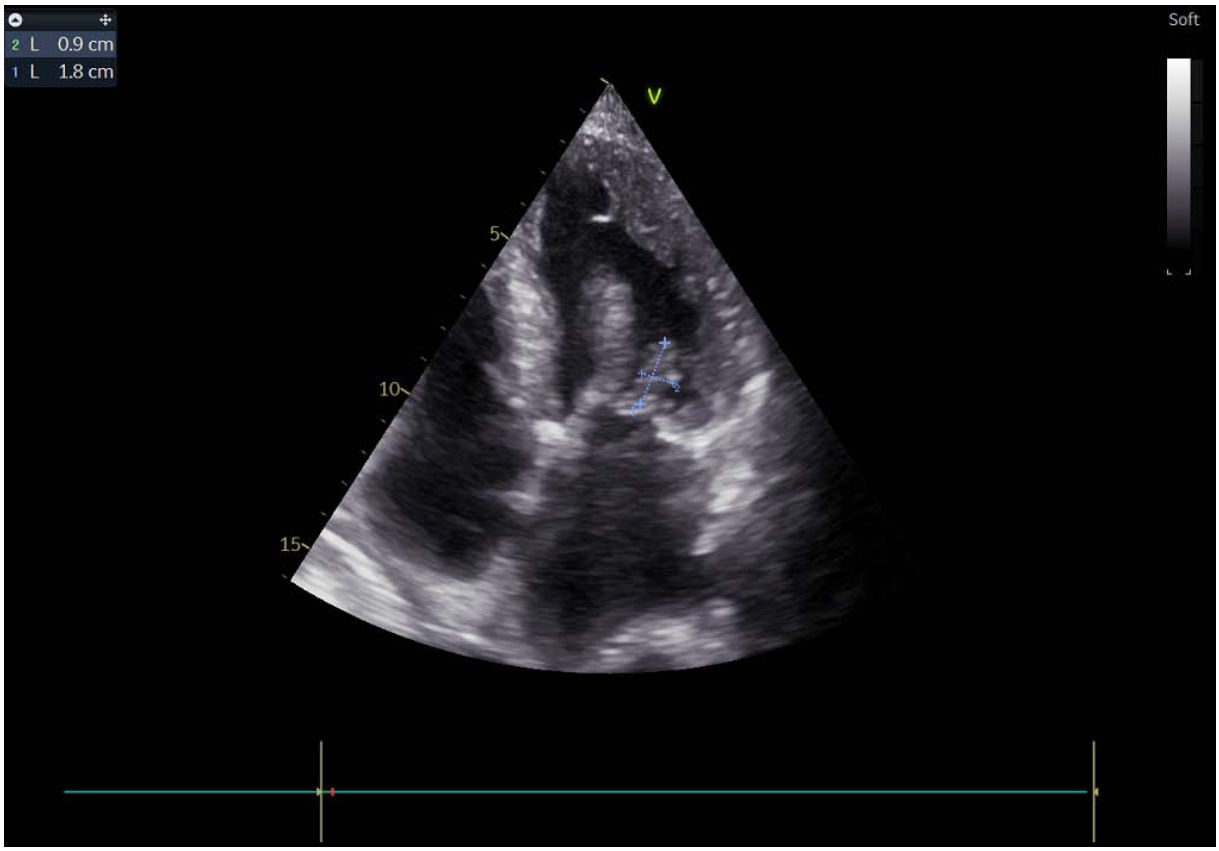


Figure 3: The mitral vegetation measuring 18*9mm

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Thoracic Ganglioneuroma: A Case Report

By Dr. Sadanand Patwari, Dr. Varun Gowda, Dr. Manoj Hambarde & Dr. Anant Beedkar

Abstract- *Objective:* Thoracic ganglioneuromas are a rare entity but can be aggressive, compressing, or invading nearby mediastinal structures. Hence surgical intervention is necessary when diagnosed.

Introduction: Ganglioneuromas are benign neurogenic tumors that arise from sympathetic ganglions and are most commonly found in teenagers and young adults. They are usually asymptomatic and sometimes diagnosed by chance. The procedure of choice is Surgical removal.

We had a forty-year-old lady who present with cough and expectoration for the last three months.

Left anterolateral thoracotomy was performed with access through the fifth intercostal space. Intraoperatively there was evidence of a mass densely adherent to left subclavian vessels, hence had to be compromised. The left subclavian vein was ligated. Left subclavian artery approximated with Autologous Interposition Saphenous Vein Graft. Histologic examination findings are consistent with Ganglioneuroma.

GJMR-I Classification: *NLMC Code: WF 970*



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Thoracic Ganglioneuroma: A Case Report

Dr. Sadanand Patwari [α], Dr. Varun Gowda [σ], Dr. Manoj Hambarde [ρ] & Dr. Anant Beedkar [ω]

Abstract- *Objective:* Thoracic ganglioneuromas are a rare entity but can be aggressive, compressing, or invading nearby mediastinal structures. Hence surgical intervention is necessary when diagnosed.

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Left anterolateral thoracotomy was performed with access through the fifth intercostal space. Intraoperatively there was evidence of a mass densely adherent to left subclavian vessels, hence had to be compromised. The left subclavian vein was ligated. Left subclavian artery approximated with Autologous Interposition Saphenous Vein Graft. Histologic examination findings are consistent with Ganglioneuroma.

Conclusion: Although thoracic ganglioneuromas are rare, clinicians should be aware of them and consider them in the differential diagnosis when necessary. If thoracic ganglioneuromas grow significantly, they can induce compressive symptoms and parenchymal damage.

Estimating surgical risk factors based on radiological investigations is beneficial when planning TG operations. Because of the mass's proximity to the aorta, left pulmonary artery, and left subclavian vessels, a thoracotomy was the safest option because it allowed the prompt intervention of an operating complication.

I. Introduction

Ganglioneuromas are benign neurogenic tumors that arise from sympathetic ganglions and are most commonly found in teenagers and young adults. They are usually asymptomatic and sometimes diagnosed by chance. The procedure of choice is Surgical removal. However, it has been proposed that the risks and consequences of this method may outweigh the advantages.

II. Case Presentation

A forty-year-old lady presented with cough and expectoration for the last three months. No other constitutional symptoms were present. There was no history of lung cancer among family members. Vitally she was stable. On Clinical examination patient had dullness and reduced breath sounds over the left infraclavicular region.

III. Investigation

Antero-posterior and Lateral view Chest X-ray revealed a large well defined homogenousradio-opacity in the left upper and part of the mid-zone. Her CECT Chest showed a large well-defined peripherally enhancing cystic lesion noted in the left upper lobe measuring approximately 10x9.5x8.7cm (CCxTRxAP). The lesion is seen adjacent to the arch of the aorta with well-maintained fat planes; likely? Large cyst and which showed no evidence of invasion into lung parenchyma, mediastinum, or the chest wall. But lesion near to the left subclavian vessels. Pulmonary function tests revealed an obstructive lung disease.

USG guided Trucut biopsy shows linear tissue bit showing spindle cells with spindle nuclei along with few ganglion cells suggestive of Ganglioneuroma.

IV. Treatment

Surgery is the preferred treatment for benign tumors of the posterior mediastinum. Although these tumours are histologically benign, they can be aggressive, compressing, or invading nearby mediastinal structures. Given this potential, these tumors are resected. Ganglioneuroma has a near-zero recurrence rate, and surgical complications are uncommon.[1]

Left anterolateral thoracotomy was performed with access through the fifth intercostal space. Intraoperatively there was evidence of a well-encapsulated mass, slightly adherent to upper lobe of left lung, compressing it. We identified dense adhesions between apex of the mass, and left subclavian vessels, 1st and 2nd rib. En-mass resection was relatively arduous, the decision was taken to carry out piecemeal excision. The mass was 12x10x8 cm in size. Mass was densely adherent to left subclavian vessels, hence had to be compromised. The Left subclavian vein was ligated. Left subclavian artery approximated with Autologous Interposition Saphenous Vein Graft. After removal of the tumor, the lung was ventilated, and expansion was observed. Two Intercostal drainage tubes were placed, one for the apex and the other for the left lung base. Excised specimen was well encapsulated and had fibrous nodule with cut sections showing whitish gelatinous tissue. On histologic examination, tumor tissue comprising of spindle cells arranged in myxoid

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background. Ganglion cells are found in groups and scattered, consistent with Ganglioneuroma.
The postoperative course of the patient was uneventful.

V. Discussion

Peripheral Ganglioneuroma is a benign, slow-growing tumor with a well-differentiated appearance. It can appear everywhere from the base of the skull to the pelvis, but the posterior mediastinum (41.5 percent) is the most common site, followed by the retroperitoneum (37.5 percent), the adrenal gland (21 percent), and the neck (8 percent)[2][3]

Thoracic Ganglioneuromas (TGs) are generally discovered as incidental findings. Thoracic ganglioneuromas may present with symptoms due to mass effect as seen in our patient. TGs have also been reported to present with symptoms of spondylodiscitis.[4] The largest ganglioneuroma in the lungs reported is 23x10x10cm [1]. They usually do not infiltrate nearby structures; however, it has been observed that they can adhere to the vertebral bodies [9] or even involve the spinal column [5],[6],[7].

The imaging features of 14 pathologically established ganglioneuromas on CT were identified by Kato et al., who found that ganglioneuromas were often well-delineated lesions with oval or lobulated contours and showed craniocaudal longitudinal growth with low attenuation on CT. [8]

On CT, our case showed a well delineated homogenous lesion with low attenuation with a post-contrast density. However, there was no calcification, fat content density, or significant enhancement.

Surgery is the definitive treatment for Thoracic Ganglioneuromas[5,9,10]

Fluid shifts and sudden pulmonary edema can occur when big intrathoracic bodies are removed. After decompression of a chronically compressed lung, patients could have re-expansion pulmonary edema [11–13]. Surgeons must also be cautious not to disturb the sympathetic trunk, a rare condition that can cause various problems, including Harlequin syndrome [7]. [14]

In our patient, the mass was densely adherent to left subclavian vessels, hence had to be compromised, which required autologous reverse saphenous vein graft and patient is recovered with relatively negligible post-operative complications[15,16]

VI. Conclusion

Although thoracic ganglioneuromas are rare, clinicians should be aware of them and consider them in the differential diagnosis when necessary. If thoracic ganglioneuromas grow significantly, they can induce compressive symptoms and parenchymal damage. Most of these masses are benign and complete excision of TG is usually safe and achievable. Preventing local extension, obtaining a histological diagnosis, preventing malignant transformation, and determining the need for subsequent therapy are the goals of surgical removal.[17]A combination video-thoracoscopic and neurosurgical approach is required for the dumbbell variety of neurogenic tumours with extension into the spinal canal.[5]

Estimation of surgical risk factors based on radiological investigations is useful when planning TG operations. Because of the mass's proximity to the aorta, left pulmonary artery, and left subclavian vessels, a thoracotomy was the safest option because it allowed for the prompt intervention of an operating complication.

Large intrathoracic masses necessitate special consideration during the postoperative period to avoid fluid shifts and hemodynamic instability[12,13]. The high mortality rate of this event necessitates careful surveillance in the postoperative phase. Surgeons must also avoid disrupting the sympathetic trunk, which can result in a variety of problems, including Harlequin syndrome, which is characterized by asymmetric sweating, and flushing on the upper thoracic region of the chest, neck and face[14]

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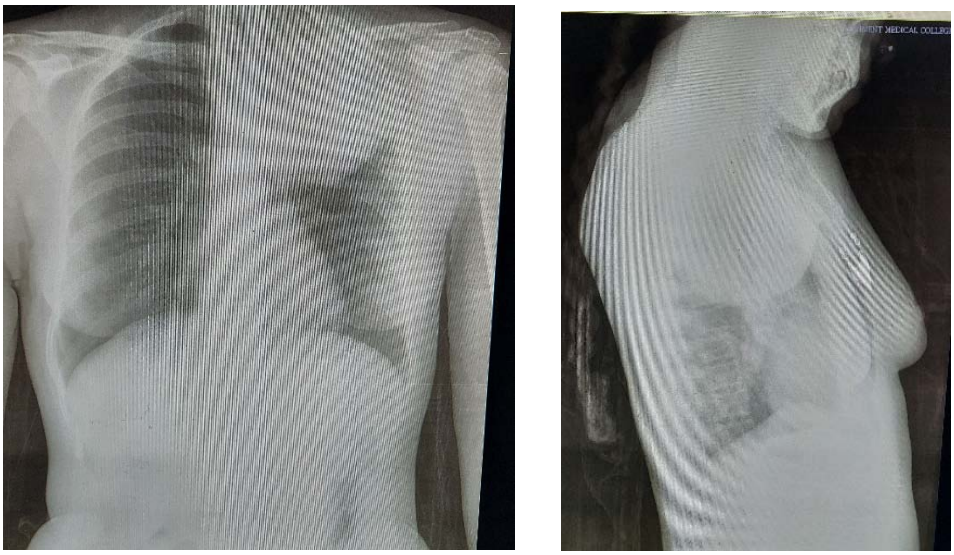


Figure 1: Chest X-ray revealed a large well defined homogenous radio-opacity in the left upper and part of the mid-zone silhouetting aortic notch. It is showing a negative Cervico-thoracic sign.

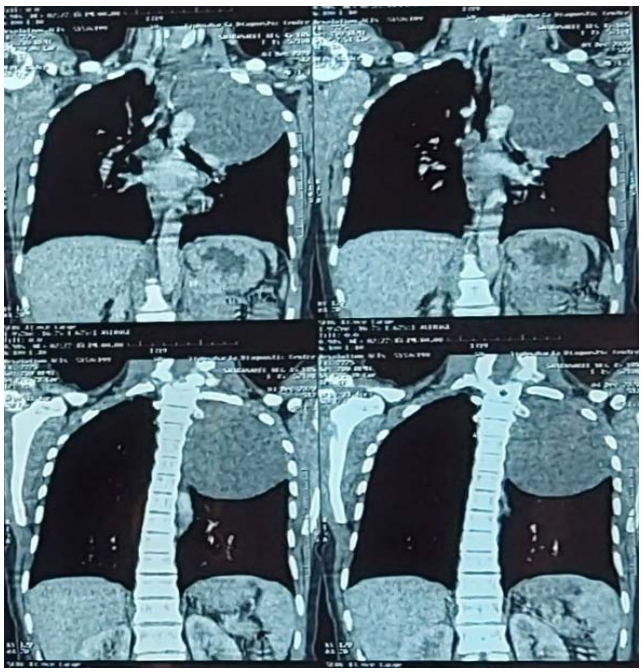


Figure 3: Contrast enhanced Computed tomography Chest revealed a large well defined soft tissue density mass lesion is noted in the left upper lobe. Laterally extending upto left lateral and posterior chest wall, however no erosion of overlying ribs. No mediastinal invasion was seen.

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Figure 4: Piecemeal removal of left intrathoracic mass

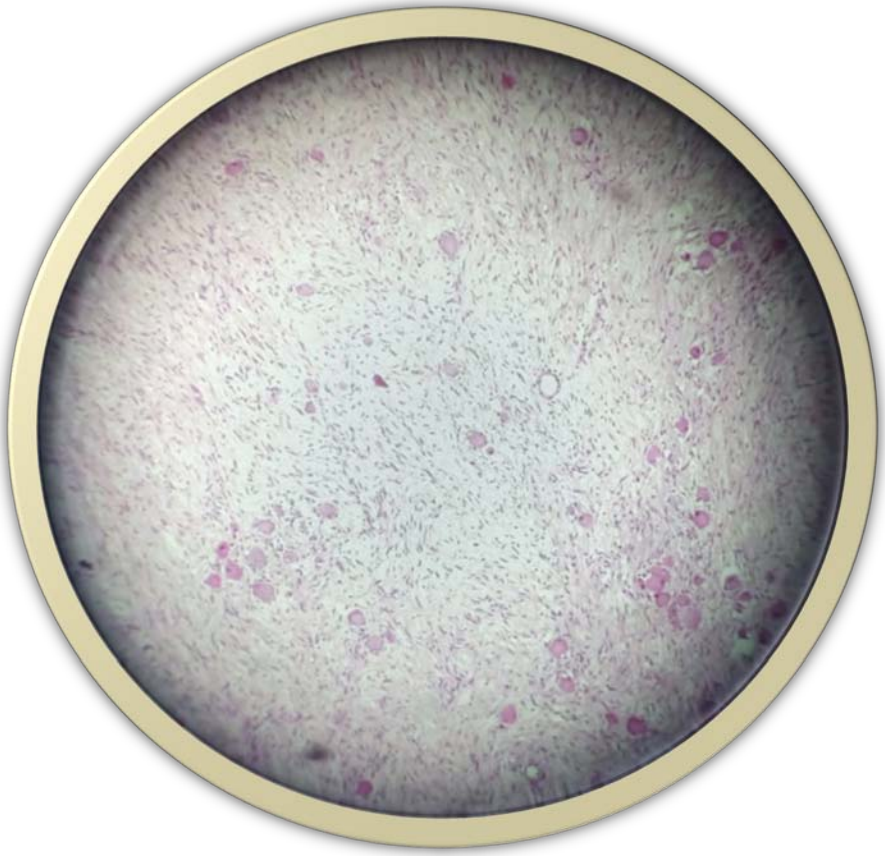


Figure 5: Microscopically, thoracic ganglioneuroma have a structure formed of spindle cells with wavy nuclei, with no cellular pleomorphism and various degrees of myxoid degeneration.

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Parenchymal Sparing Surgery with Minimally Invasive Approach in Castleman's Disease: Case Report

By Eylem Yentürk, Hüseyin Melek, Hülya Öztürk Nazlıoğlu & Ahmet Sami Bayram

Uludağ University

Abstract- The Castleman's disease is mostly benign and has an uncertain aetiology. Its clinical type with a unicentric placement is generally localised in thoracic structures and receives the highest benefit from surgery. In this paper, we have presented our unicentrically-placed Castleman's case on which we performed excision with VATS rather than conventional surgery.

Keywords: VATS, castleman's disease, lollipop follicle, parenchymal sparing3.

GJMR-I Classification: NLMC Code: WJ 768



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Parenchymal Sparing Surgery with Minimally Invasive Approach in Castleman's Disease: Case Report

Eylem Yentürk [α], Hüseyin Melek [σ], Hülya Öztürk Nazlıoğlu [ρ] & Ahmet Sami Bayram [ω]

Abstract- **The Castleman's disease is mostly benign and has an uncertain aetiology. Its clinical type with a unicentric placement is generally localised in thoracic structures and receives the highest benefit from surgery. In this paper, we have presented our unicentrically-placed Castleman's case on which we performed excision with VATS rather than conventional surgery.**

Keywords: VATS, castleman's disease, lollipop follicle, parenchymal sparing3.

I. Introduction

Castleman's disease, which is also known as the angiofollicular lymph node hyperplasia, is a rare lymphoproliferative disorder. Regarding the clinical appearance, the disease has two types, namely the unicentrically and multicentrically placed. The unicentric placement (UCD) is typically localised and generally asymptomatic. The multicentric placement (MCD), on the other hand, is often a systemic disease seen in presence of an immune system defect, such as the HIV. The unicentric pattern is generally localised in mediastinum and pulmonary hilum and it is the most frequent variation.

The conventional surgical approach is thoracotomy for the Castleman's disease located in the thorax. Having been performed more often in recent years, thoracoscopic surgery has been seen to be a safe and efficient approach for the treatment of mediastinal tumors (1, 2), though a limited amount of evidence and few cases have been reported regarding the VATS application in the UCD. The parenchymal lung involvement of the disease is rarely encountered. We have treated our subject with the videothorascopic approach, which is rarely reported in the literature, leaving the parenchyma intact.

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II. Case Presentation

Our patient was a 45 year-old male. Following the incidental identification of an anomaly during a medical inspection in his work place, he was sent to our hospital for further investigation and treatment. A non-smoker, his chest radiography did not show any significant lesions, except for a left hilar enlargement (Fig. 1A). His thoracic CT scan indicated that there was a 3*2 cm mass stretching from the non-enhancing left hilar area to the parenchyma (Fig. 1B). The FDG involvement value of the lesion was measured to be SUVmax 1.6 in PET CT (Fig. 1C). The physical examination and the blood chart were normal. The patient did not have any immune system defects and no diagnostic findings were encountered in his bronchoscopy examination. There were also no diagnostic information in his family background and he did not have any additional diseases.

The patient, who was decided to undergo a surgery for diagnosis and treatment, was intubated with a double-lumen endotracheal tube under general anaesthesia. A 3 cm mass lesion was identified to be sitting on the interfissural area in the hilar vicinity via the single-lung ventilation three-port VATS approach in the right lateral decubital position (Fig. 1D and E). Severely vascularised, the mass was removed from the thorax as an en bloc by dissecting it from the lingula segment parenchyma with an endostapler and by sparing the interlobar arteries and veins (Fig. 1F). Following hemostasis, a single chest tube was placed inside the thorax. On the third post-operative day, the tube was removed and the patient was dispatched. The follow-ups of our patient still continue in the twelfth post-operative month.

In the histopathological examination, an image of a typical "lollipop folicule" was seen inside the vascularised hyalinising germinal centre (Fig. 2A and B). The simultaneous haematological check-ups of our case, which is regarded the hyalinovascular type Castleman's disease, are still on-going.

III. Discussion

Castleman's disease has three histopathological subtypes, namely the hyalinovascular (90% of all cases), the plasma cell (8-9% of all cases),

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and the intermediary (1-2% of all cases) (3). The result in our case turned out to be the most frequently encountered one – the hyalinovascular-type.

Although the disease does not have a high-specificity method of diagnosis, the lesions can be identified easily by a CT scan. The median SUVmax value of the UCD in the literature is 5.1 (offset values are 2.2-10) (4). The SUVmax value in our case was seen to be 1.6. PET CT can be used to reduce the differential diagnosis.

Castleman's disease can be diagnosed through a histopathological verification. Especially in unicentrically placed cases, surgical en bloc resection also provides a curative treatment. The purpose of a UCD surgery is to completely remove the lesion. For the UCD patients who received incomplete resection or were not able to be resected, response to radiotherapy was reported to be 70% (5). Expected results may not be acquired from surgery or radiotherapy with some asymptomatic local patients. With these patients, the systemic chemotherapy which is applied for the MCD is a good option.

IV. Conclusion

VATS is a significant alternative in the diagnosis and treatment of Castleman's disease placed in the thorax. Even though the conventional surgery is performed commonly, a curative treatment can be provided with a minimally invasive approach. Complete resectability is possible for lesions whose edges are clearly identified.

Declarations

Funding: This study wasn't funded.

Conflict of interest: Eylem Yentürk, Hüseyin Melek, Hülya Öztürk Nazlıoğlu and Ahmet Sami Bayram declare that they have no conflict of interest.

Ethics approval: Studies of human interest were conducted according to the ethical standards of the responsible committee or, for all subsequent revisions, the 1964 Declaration of Helsinki. Since it was a retrospective study, an ethics committee approval was not required.

Consent to participate: Written informed consent was obtained from the patient for publication. A copy of the written consent is available for review by the Editor-in–Chief of this journal.

Consent for publication: Author made consent from individuals to publish their data prior to submitting paper to journal.

Availability of data and material: Suitable.

Code availability: Suitable.

Authors' contributions: We hereby certify that the work submitted is in full accordance criteria for authorship.

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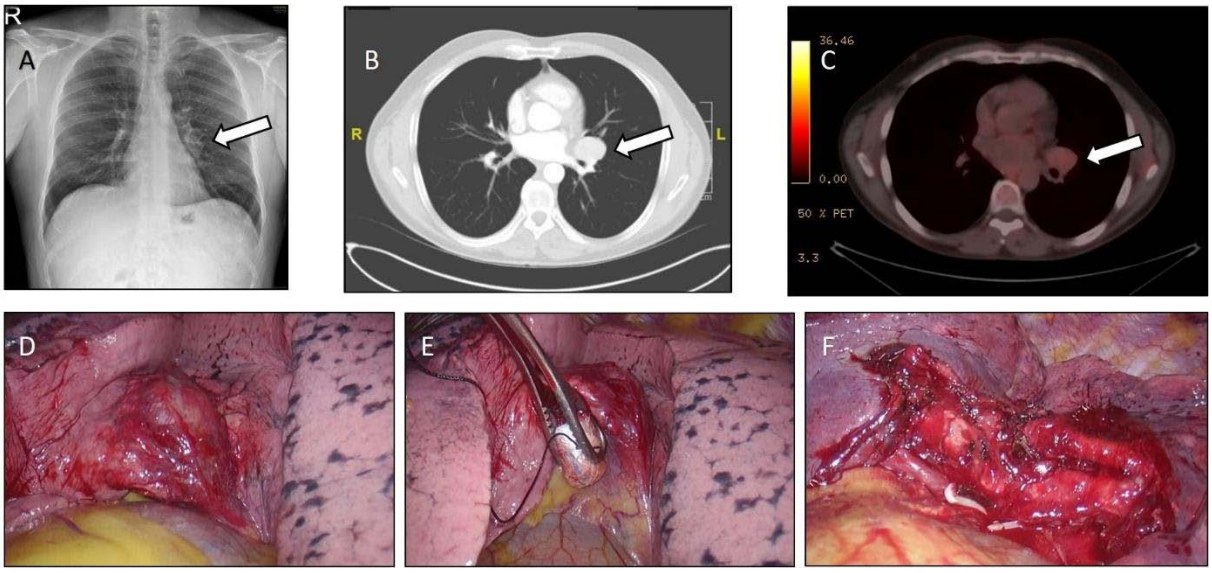


Figure 1: (A) PA chest radiography; (B) Thorax CT (C) PET CT; (D and E) Mass lesion settled in the interfissural area; (F) Image after the parenchymal protecting complete resection

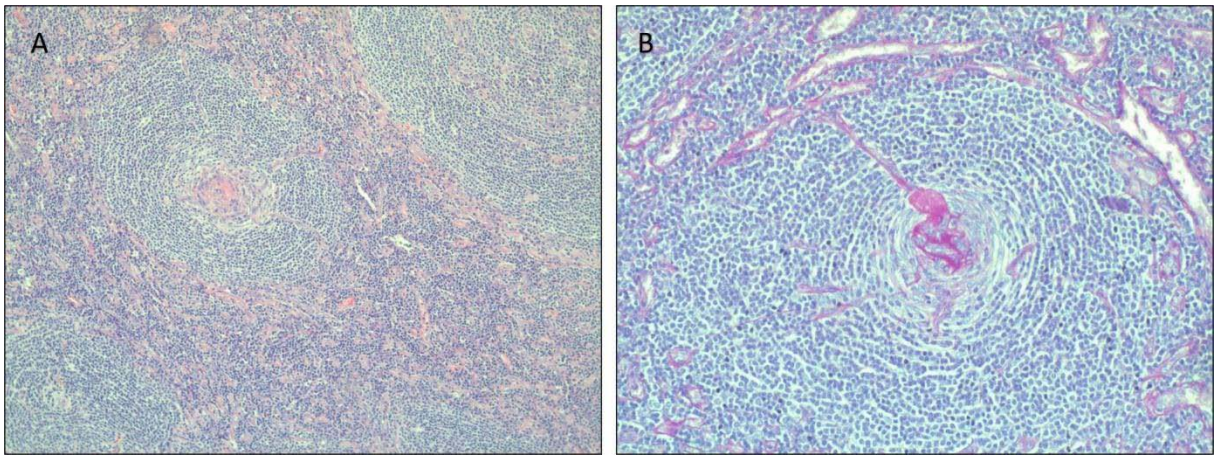


Figure 2: (A) Hyalinised germinal centre involving vascularisation (H&E, 25X); (B) Image of lollipop folicule (PAS, 200X)

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To Compare the Efficacy of Tap Block to Attenuate Pain in Laparoscopic Surgeries when Given in Pre-Incision to Post-Operative Period

By Arjun Joshi

Abstract- The concept of Enhanced Recovery after Surgery not only saves the OT turn over time but has been shown to reduce the hospital stay and cost of treatment significantly. Various benefits of multi modal analgesia have already been proven in literature. Transversus abdominis plane (TAP) block has established itself a reliable tool for allaying pain particularly in laparoscopic surgeries. However, the timing for this block has not been specifically defined in literature. The primary aim of the present study is to compare the efficacy of preoperative vs. postoperative TAP block for allaying surgical pain while using 0.25 % plain bupivacaine via Visual Analogue Score. Secondary aim is to compare the consumption of opioids postoperatively after laparoscopic procedures when block is given pre-and post-incision period in Milligram Morphine Equivalent.

Methods: A retrospective cohort study was conducted in a service hospital of Armed forces located at an altitude of 12000 feet above mean sea level between September 2020 to September 2021 in patients who underwent elective laparoscopic appendectomy and cholecystectomy.

GJMR-I Classification: *NLMC Code: QZ 268*



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Methods: A retrospective cohort study was conducted in a service hospital of Armed forces located at an altitude of 12000 feet above mean sea level between September 2020 to September 2021 in patients who underwent elective laparoscopic appendectomy and cholecystectomy. The study was conducted to compare the efficacy of Trans Abdominal Plain block for allaying surgical pain when given pre-incision and when administered immediately after completion of surgery and before extubation using Visual Analogue Score (VAS) (Fig.1) and postoperative opioid use in Milligrams Morphine Equivalent (Fig.2). In the present study 40 patients were included in Group I who received TAP block 15 minutes before the incision and 40 patients were included in Group II who received block after completion of surgery and just before extubation. Standard anaesthesia technique was followed in both the groups and both the groups received the block while being under general anaesthesia under Ultra sonographic guidance by a trained Anaesthesiologist (Fig.3). 10 ml of 0.25 % Bupivacaine was administered bilaterally in the muscular plain in both the study groups. Apart from the TAP block both the groups received 1 gram of intravenous Paracetamol prior to incision as a part of institutions multi-modal analgesia approach. The primary outcome of the study was assessment of post-operative pain by VAS at 30 minutes 3 hours and 6 hours. Secondary outcome was the comparison of opioid consumption in MME at similar time lines.

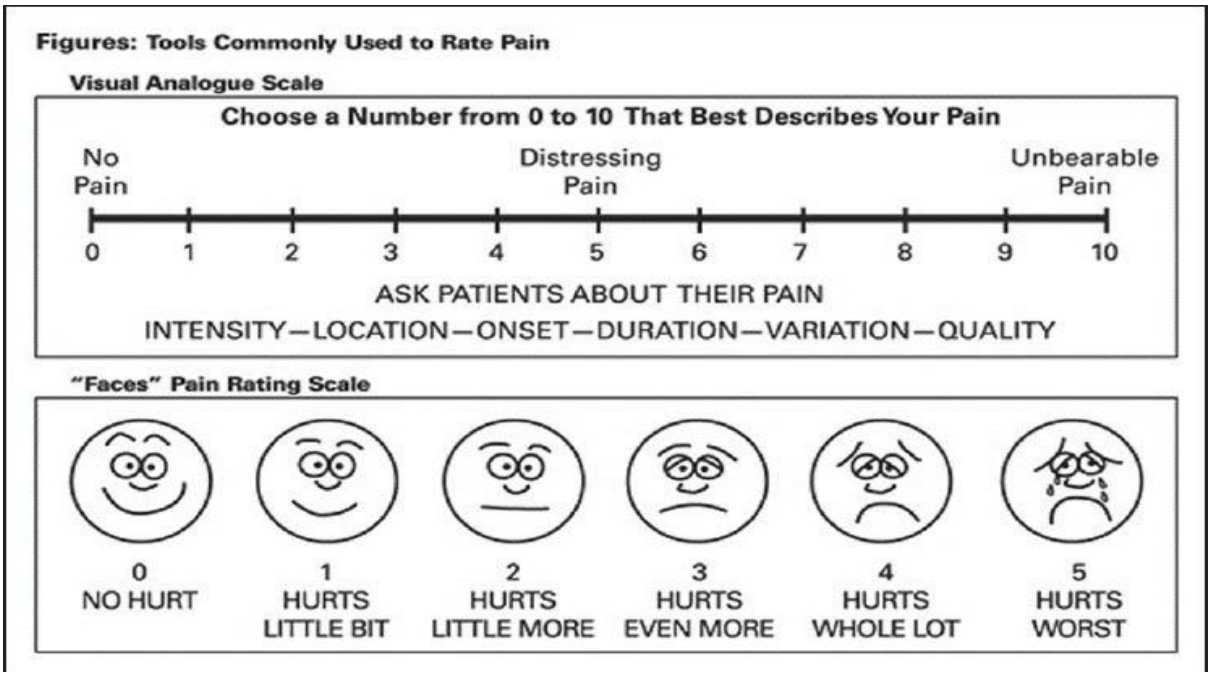


Fig.1: [13] Visual Analogue Scale

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Opioid (mg, Except Where Noted)	Oral MME Conversion Factor [1]
Buprenorphine	N/A
Codeine	0.15
Fentanyl, intravenous (mcg)	0.3
Hydrocodone	1
Hydromorphone	4
Meperidine	0.1
Methadone	3
Morphine, oral	1
Morphine, intravenous	3
Oxycodone	1.5
Tramadol	0.1

Fig. 2: [14]Morphine milligram Equivalent conversion factor

Result: Patients who received pre-incision plain 0.25 % Bupivacaine in TAP blocks had a better Visual Analogue Score and lesser opioid requirements at 30 minutes, 3 hrs and 6 hrs (1.03 vs 2.83, 0.98 vs 3.73 and 2.00 vs 5.35) and (0 vs 1.75, 0 vs 3.375, 0.875 vs 5.125 in MME) respectively.

Conclusion: Administration of 0.25 % Plain Bupivacaine TAP block pre-incision was associated with significantly better control of pain and lesser consumption of opioid medications in post-operative period.

I. Background

In order to reduce the surgical stress response and to facilitate the early return of baseline function for patients undergoing surgery the concept of Enhanced Recovery After Surgery (ERAS) has been well established [1]. Reduction of surgical stress by methods including but not restricted to attenuation of pain by use of regional anaesthesia, early mobilization, and early enteral nutrition encompasses the components of ERAS [2,3]. Various clinical publications have supported that following ERAS protocol has shown a considerable reduction in duration of hospital stay, period of postoperative ileus, reduced morbidity, and an earlier return of baseline physiology [1,4,5,6] Attenuation of perioperative pain forms an integral part of ERAS, more so after abdominal surgeries. Sub-optimal pain control is proven to increase the in-patient department load, which itself has financial implications leading to patient dissatisfaction [6]. Use of multimodal anaesthesia techniques including but not restricted to neuraxial blockade in order to achieve an optimal pain control not only leads to a better patient experience in post op period but also reduces the demand of opioids. [7,8,9]. Transversus abdominis plane (TAP) block is an example of a regional anaesthetic technique that has been used extensively in abdominal surgery [10,11]. The block involves injecting local anaesthetic agent into the fascial planes between the internal oblique and transversus abdominis muscles. The duration of action for plain bupivacaine ranges from 2 to 10 hours with peak effect noted around 30 to 45 min [12]. Although the TAP block is used extensively for laparoscopic abdominal surgeries the time for administering the block for post-operative analgesia has not been clearly established in literature. In the present study, we assessed the effect of preoperative vs. postoperative administration of TAP block using plain 0.25 % bupivacaine on postoperative opioid use in patients undergoing elective laparoscopic appendectomy and cholecystectomy.

II. Material and Methods

a) Patient selection

After taking ethical clearance from the institute and informed consent from participants we included ASA I, II patients undergoing elective laparoscopic appendectomy and cholecystectomy in a service hospital of Armed forces located at an altitude of 12000 feet above mean sea level between Sep 2020 to Sep 2021. Standard anaesthesia technique was followed in both the groups and participants in both groups were administered Intravenous paracetamol 1 gram prior to the surgical incision as a mart of multi-modal anaesthesia approach. Patients were divided in 2 groups based on timing of TAP block procedure. Group I included the patients who were administered block 15 minutes before the surgical incision and Group II included the patients who received the block after completion of surgery just before extubation.

b) TAP block technique

Both the groups in the present study were administered TAP block inside the operating room after induction with general anaesthesia following standard anaesthesia techniques and under Ultrasound guidance by a trained Anaesthesiologist. (Fig.3) In group, I the block was administered 15 minutes prior to the surgical incision while in Group II the block was administered after the completion of the surgical procedure and before extubation. TAP block in both groups was administered bilaterally by injection total of 10 mL of 0.25 % plain bupivacaine each side in the fascial plane under ultra-sonographic guidance between the internal oblique and transversus abdominis muscles in the

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midaxillary line. Both the groups received 1 gram intravenous paracetamol as a part of our multimodal anaesthesia technique. None of the patients in the study received additional regional anaesthesia, including epidural anaesthesia.

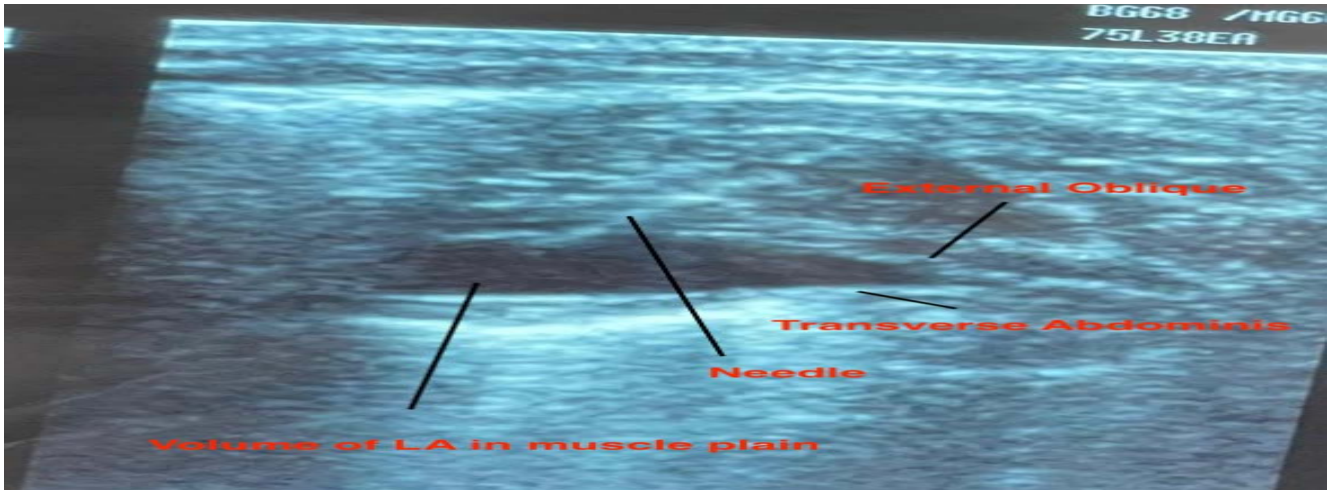


Fig. 3: Trans Abdominal Plain Block

c) Outcomes

The primary outcome of the study was based on the post-operative pain assessment using VAS to assess the severity of pain. The secondary outcome of the study was postoperative opioid use in milligram morphine equivalent (MME) and non-opioid analgesic medications administered in the early post-operative period.

III. Statistical Analysis

Statistical analyses were conducted to compare the baseline characteristics of the patients who received pre-incisional TAP blocks with those who received postoperative TAP blocks. Continuous variables were described using the mean and standard deviation (SD), Students t test was used and $P < 0.0001$ was considered statistically significant. All analyses were done in SAS 9.4 (SAS Institute, Cary, NC).

Table 1

	Mean of age	SD	SEM	P value
Group I	31.88	9.63	1.52	0.6822
Group II	32.73	8.85	1.40	
	Mean of BMI	SD	SEM	P value
Group I	23.753	2.067	0.327	0.8408
Group II	23.663	1.925	0.304	
	Mean of VAS 30 minutes post extubation	SD	SEM	P value
Group I	1.075	0.62	0.10	0.0001
Group II	2.825	8.87	0.14	
	Mean of VAS 3 hours post extubation	SD	SEM	P value
Group I	0.975	0.62	0.10	0.0001
Group II	3.85	0.78	0.12	

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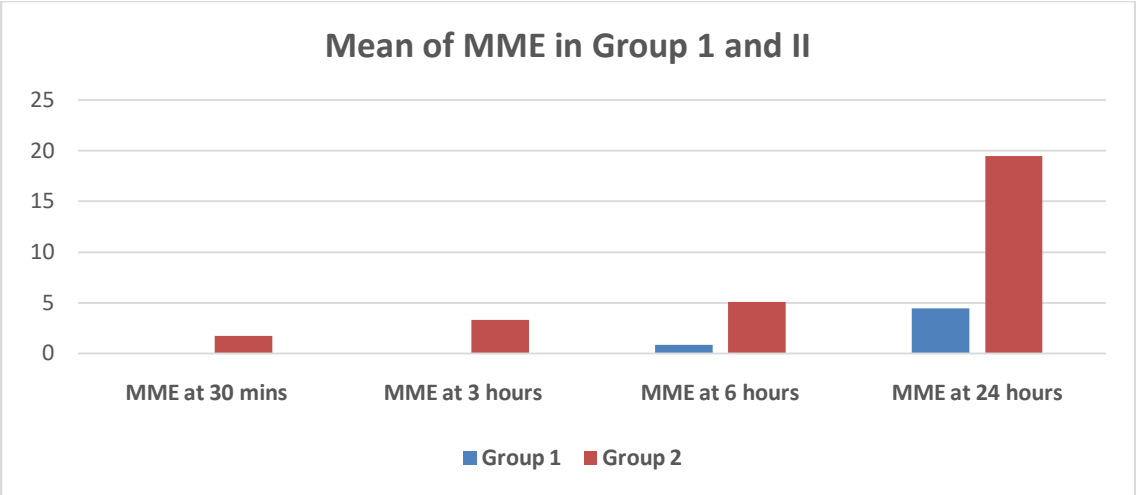
	Mean of VAS at 6 hours post extubation	SD	SEM	P value
Group I	2.000	0.60	0.09	0.0001
Group II	5.37	0.89	0.14	

	Mean of Tramadol in MME in 30hours	SD	SEM	P value
Group I	4.313	2.764	0.437	0.0001
Group II	19.500	2.727	0.431	

IV. Result

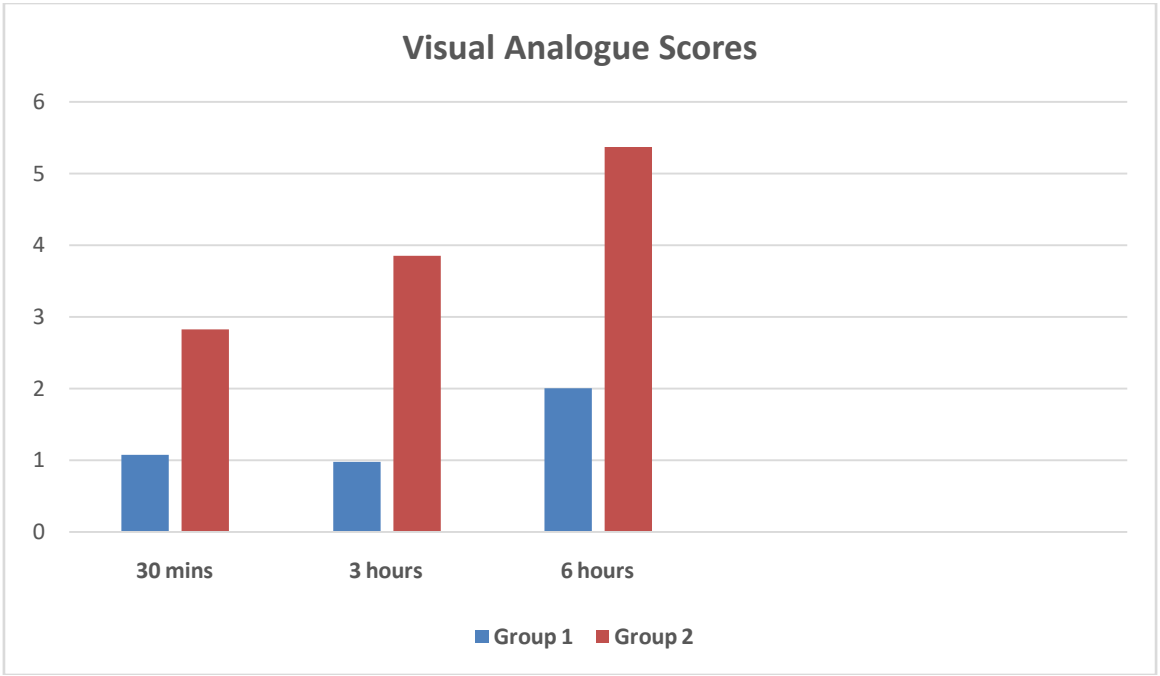
a) Descriptive analysis

A total of 80 patients were included in the present study. Group I included 40 patients who received TAP block 15 minutes prior to the surgical incision while Group II included 40 patients who received TAP block after the completion of surgery and before extubation. The mean (SD) patient age was 31.88 in Group I and 32.73 in Group II, the mean (SD) body mass index was 23.753 kg/m^2 in Group I and 23.663 kg/m^2 in Group II. There were no significant differences in the 2 groups with regard to age, sex, body mass index, American Society of Anaesthesiology classification, history of opioid use inflammatory pathology (Table 1.) The 2 groups were similar in terms of comorbidities, including history of hypertension, diabetes mellitus, hyperlipidaemia, smoking, and alcohol use. The surgical indications and surgical approaches were similar between the 2 groups. Group I had however comparatively lower Visual Analogue Scores noted at 30 minutes, 3 hours and 6 hours post-operatively as compared to group II noted as 1.07 vs 2.82, 0.97 vs 3.85 and 2.00 vs 5.357 respectively Graph 2. Moreover, the consumption of opioids as noted by Morphine milligram equivalents in similar time lines was significantly lesser than in group I when compared to group II noted as 0 vs 1.75, 0 vs3.375 and 0.875 vs 5.125 respectively Graph 1in with a p value of <0.0001.



Graph 1

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Graph II

V. Discussion

Pain management forms an integral part of the post-operative care. With the evolution of minimally invasive surgical procedures, the modern surgical management is moving towards fast turnover of patients and decreasing over all hospital stay. The ERAS protocol in surgery has not only facilitated in the early return of baseline physiological parameters but has also been pivotal in reducing the financial implications on the patients, needless to mention the additional burden on the health care services. In the recent times of pandemic like Covid 19 pneumonia it is always prudent to decrease the in hospital stay of the patients as much as possible while not refuting them the benefit of surgery. Since the postoperative pain management is a fundamental part in achieving the goals of ERAS; usage of multi-modal anaesthesia including but not restricted to neuraxial blocks have been an attractive modality for attenuating post-operative discomfort. Regional anaesthesia techniques viz. TAP blocks have established themselves as an appealing methodology for diminishing post-operative opioids use especially given their low risk of adverse effects. More so in high altitude areas where conservation of minute ventilation is of paramount importance due to existing hypoxic conditions it is essential to avoid drugs which cause depression of central respiratory centres. In the present study, better VAS scores were seen in post-operative periods at 1hour, 3 hours, 6 hours in patients who received pre-operative TAP blocks when compared to those who received TAP block after the completion of surgery. Furthermore, the requirement of opioids as well as non-opioid analgesics in the post-operative period was significantly reduced in the patients who received the block pre-incision Graph 1. There was no significant difference in the average length of stay, surgery time or re-surgeries in both the groups.

Various clinical publications have already established the benefit of TAP block in laparoscopic procedures for abdominal surgeries. Tikuisis et al. in his study demonstrated that patients who were administered TAP blocks pre-incision had significantly lower pain scores at 1, 3, and 6 h [15].

Pirrera et al. compared the use of preoperative Ropivacaine TAP block vs. thoracic epidural analgesia in patients before elective laparoscopic colon resection. Both patient groups were a part of a standard enhanced recovery after surgery pathway. Additionally, the TAP group had significantly lower rates of postoperative nausea, vomiting, ileus, and paraesthesia. There was no significant difference in hospital length of stay or 30-day readmission rate [16].

In a prospective, randomized, double-blind study, Keller et al. assessed the effect of TAP blocks on postoperative pain in patients following laparoscopic colorectal resections. Compared to their counterparts, the TAP group had significantly lower pain scores and used fewer opioids. However, there was no difference in hospital length of stay and readmission rate between the groups [17]. These research study findings are consistent with our current results. The administration of TAP block before the surgical incision is in line with pre-emptive analgesia in the present study we found that the administration of TAP block using Bupivacaine post-surgery and before surgical incision is an optimal time. The first study on pre-emptive analgesia was published by Woolf and Wallin 1986. In a model of central hyper

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excitability produced by electrical stimulation of C-fibres and recorded in rat dorsal horn neurons, they showed that the amount of systemically administered morphine needed to prevent the development of hyper excitability was much less than the amount needed to reverse it after the establishment of hyper excitability [18] Surgery-induced central sensitization has two phases: incisional and inflammatory (reaction to the damaged tissue). It is possible to suggest that with inflammatory injury playing the dominant role, anti-nociceptive protection provided by pre-emptive treatment extends well into the postoperative period to cover the inflammatory phase.

VI. Conclusion

The modern medicine aims at minimally invasive procedures and enhanced recovery after surgery to decrease the overall hospital stay. More so in the present era of Covid-19 pandemic it may be only prudent to keep the in-hospital exposure of the patients minimal while not denying them the benefits of surgery. A reduced hospital stay would not only decrease the financial implications on patients but would also decrease additional burden on health care services. Since allaying the post-operative pain is pivotal in early recovery of patient's usage of neuraxial blockade has become a vital modality. We advocate the usage of TAP block for Laparoscopic abdominal surgeries and strongly recommend that TAP block be administered after the completion of surgical procedure and before extubation for better post op analgesia.

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Neutrophile-Lymphocyte Index in Patients with Peripheral Arterial Disease

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Abstract- *Introduction:* It has been demonstrated that inflammatory processes play a leading role in many chronic diseases and that they are producers of endothelial dysfunction that cause the symptoms and signs of these diseases, determining their levels of morbidity and mortality in most of them. Its early detection and assessment will allow us to adequately control it. The Neutrophil-Lymphocyte Index has demonstrated its value as a prognostic factor for inflammatory processes, which is why it has been applied in patients with peripheral arterial disease (PAD).

Material and method: The sample was made up of all patients with PAD and underwent surgery, determining the N / L índex levels before and after surgery in 24 hours, 15 days, 30 days, 60 days, 90 days, and 365 days.

Keywords: *index, neutrophils, lymphocytes, risk, morbidity and mortality.*

GJMR-I Classification: *NLMC Code: WG 510*



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Neutrophile-Lymphocyte Index in Patients with Peripheral Arterial Disease

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Abstract- ***Introduction:*** It has been demonstrated that inflammatory processes play a leading role in many chronic diseases and that they are producers of endothelial dysfunction that cause the symptoms and signs of these diseases, determining their levels of morbidity and mortality in most of them. Its early detection and assessment will allow us to adequately control it. The Neutrophil-Lymphocyte Index has demonstrated its value as a prognostic factor for inflammatory processes, which is why it has been applied in patients with peripheral arterial disease (PAD).

Material and method: The sample was made up of all patients with PAD and underwent surgery, determining the N / L índex levels before and after surgery in 24 hours, 15 days, 30 days, 60 days, 90 days, and 365 days.

Results: N / L índex, in pre-operative low risk 36.7%, intermediate 37.7% and high 25.4%, surgery performed low risk 54.9%, intermediate 28.4% and high to 16.6% (INL> 3) at 24 hours 2 acute thromboses, 1 at 15 and 60 days, with 2 prosthesis sepsis at 90 days. INL reached 5 or more, at 24 hours 2 deaths, 2 thromboses, 90 days 2 amputees and more than 365 days, 1 acute occlusion, 1 amputee. The most frequent complication is thrombosis of the revascularization procedure. Mortality 0.98 with two deaths in the first 24 hours of the procedure where the IN / L was always above 5. A cumulative patency of 89.7% was achieved.

Conclusion: Prognostic value of IN / L is extremely useful in the prevention of amputations, morbidity and mortality, and cumulative patency

Keywords: index, neutrophils, lymphocytes, risk, morbidity and mortality.

I. Introduction

Arteriosclerosis (AEO) is the main etiology in arterial diseases with production of tissue ischemia, necrosis and therefore loss of limbs or life if they are not treated properly, so its prevention plays a leading role in its treatment, monitoring and control [(1-2)]. The neutrophil / lymphocyte ratio (INL) has been proposed as a predictor of vascular risk and indicator of atherosclerosis, therefore, it has been suggested that the management of this index is an excellent marker in the prediction of mortality and cumulative patency in revascularizations for peripheral arterial disease [(3-7)] Annually, cardiovascular diseases (CVD) where arteriosclerosis plays its main etiological role, cause about 4 million deaths in Europe, which accounts for 47% of all deaths and 40% in the European Union. Peripheral vascular diseases, also of the same etiology, play a fundamental role in the figures for mortality and expenses in medical care. Very similar statistics on morbidity and mortality reflect the studies in the United States, even exceeding them on many occasions. [(1)] The multisystemic nature of AEO makes both coronary artery disease, as well as vascular-cerebral and peripheral arterial disease, present with high rates in many developed or developing countries. The cost of CVD in Europe is 196,000 million euros per year [(1-2)]. The high prevalence of primary risk factors, vulnerable or not, helps the development of diseases caused by atherosclerosis. This places its detection and control in a very high priority position. The World Health Organization considers that 75% of deaths from these diseases could be prevented with appropriate changes in lifestyle and modification of risk factors. Consequently, the early detection of patients with cardiovascular risk constitutes an objective to prioritize [(2)]. The determination of the systemic inflammatory state is emerging as a new prognostic marker, mainly in the field of oncology, cardiovascular diseases, vascular brains and peripheral arteries [(3-5)]. The neutrophil / lymphocyte índex has been established as a potential marker of systemic endothelial dysfunction, very inexpensive, non-invasive, repeatable, very accessible, extremely fast and independent of all other known biological factors or not, especially in asymptomatic patients [(3-6)]. Among the pathogenic mechanisms described in atherosclerosis, endothelial dysfunction stands out both at the microvascular level with decreased nitric oxide, increased Von Willebrand factor, vascular endothelial growth factor (VEGF), dimethylarginine asymmetric, as well as the macro vascular given by vasodilation. This damage is sometimes explained by inflammation of the

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endothelium of the microvasculature, which favors the accumulation of lipids and the progress of atherosclerosis. This neutrophil / lymphocyte index (INL) is defined as the absolute neutrophil count divided by the lymphocyte count and allows us to demonstrate the balance that exists between the neutrophil active component of the systemic inflammatory response and the lymphocytes considered the regulatory and protective component.

It is the reason why an elevated INL is representative of a degree of inflammation exceeded [5-11] Unlike other markers, this does not require specific quantification in its analysis, therefore it constitutes a very efficient, low-cost, easy-to-obtain and very useful evaluation element for patients who are going to undergo cardiac surgery and vascular [8-11].

II. Scientific Problem

The need to establish adequate behaviors in the prediction of morbidity, mortality and cumulative patency in patients undergoing revascularization surgery supports the performance of this study because, unlike other markers, it is very efficient, inexpensive, easy to obtain and very useful, for patients who are going to undergo both cardiac and vascular surgery

III. Objectives

Describe the clinical evolution of patients undergoing revascularization due to peripheral arterial disease and, through the neutrophil-lymphocyte index (INL), establish a prognostic marker of cumulative patency, according to the level of risk and multisystematization of the arteriosclerotic disease.

IV. Methodology

A longitudinal descriptive study was carried out in patients undergoing revascularization due to peripheral arterial disease, treated at the Ernesto Che Guevara Cardiocentro in Santa Clara, CUBA in the period July 2017 to July 2020, with the aim of specifying the evolution of these patients through the Neutrophil-lymphocyte índex (INL) as a prognostic marker of the disease through cumulative patency. The study population was made up of all the patients who underwent revascularization interventions for peripheral arterial disease, attended by the Cardiocenter Vascular Surgery Service in the indicated period and who met the inclusion criteria, agreeing to participate in study and attend all consultations according to the established schedule, to monitor the neutrophil-lymphocyte índex As exit criteria, patients who died during the study period or those who did not want to remain in it were taken into account. The sample was made up of 204 patients. All the patients included in this study underwent hematological tests within the preoperative period and calculations of the neutrophil and lymphocyte numbers, before the intervention, 24 hours after the operation, at 15 days, at one month, at two and at three months and in cases of more than a year after the operation, they attended the vascular surgery outpatient clinic. The degree of cumulative permeability was verified through symptoms, physical examination and control vascular ultrasound at each follow-up visit. The data were obtained from the individual medical records of the operated and from a data collection form previously prepared.

They were taken to an Excel database, for further processing in SPSS version 15.0 for Windows. The results were presented in a table and graphs for a better understanding.

V. Results

Neutrophile-Lymphocyte Index in Patients with Peripheral Arterial Disease Vascular Cardiocentral Surgery Service
2017-2020
Age and Sex

Table 1

Age and Sex	#	%
Under 40 years old	9	4,4
41 a 50	18	8,9
51 a 60	71	34,8
61 a 70	73	35,7
More than 70 years	33	16,2
Total	204	100.0
Male Female Total	129 75 204	63,2 36,8 100,0

Fte. C H

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Table # 1 shows us that the highest number of cases was in the 6th and 7th decade of life, with 71 and 73 for 34.8% and 35.7% respectively, with the male sex predominant in 63.2 %, a primary characteristic in patients with peripheral arteriopathies with a predominance of arteriosclerosis as an etiological factor. The results of the study agree with the majority of the authors reviewed. [1-12]

Neutrophile-Lymphocyte Index in Patients with Peripheral Arterial Disease Vascular
Cardiocentral Surgery Service
2017-2020
Proceed Revascularizing and Predomining Risk Level According to Inl

Table 2

Proceed Revascularizer	Risk Level Pre Surgical			Risk Level Post Surgical				
	L	*I*	*H*	*L*	*I*	*H*	*#*	*%*
FEMORO-POPLITEAL B/P	*28*	*30*	*18*	*55*	*15*	*6*	*76*	*37,6*
CAROTIDA TET	*17*	*15*	*11*	*25*	*11*	*7*	*43*	*21,3*
ILIO-FEMORAL B/P	*8*	*5*	*3*	*10*	*4*	*2*	*16*	*7,8*
ILIO-ILIAL B/P	*4*	*5*	*3*	*6*	*3*	*3*	*12*	*5,7*
SIMPATECTOMY	*5*	*3*	*3*	*2*	*5*	*4*	*11*	*5,3*
AXILO-BIFEMORAL B/P	*1*	*3*	*6*	*3*	*4*	*3*	*10*	*4,9*
ACUTE THROMBOSIS	*5*	*3*	*2*	*1*	*6*	*3*	*10*	*4,9*
CROSS OVER	*2*	*4*	*3*	*2*	*3*	*4*	*9*	*4,3*
AORTO-BIFEMORAL B/P	*1*	*2*	*3*	*2*	*3*	*1*	*6*	*2,9*
ANEURYSMS	*0*	*5*	*1*	*1*	*4*	*1*	*6*	*2,9*
EAGLE SYNDROME	*4*	*1*	*0*	*5*	*0*	*0*	*5*	*2,4*
TOTAL	*75*	*76*	*53*	*112*	*58*	*34*	*204*	*100*

Fte.C.H

Table 2 shows the revascularization procedures led by the By Pass techniques and within them the femoro-popliteal with 76 cases for 37.6%, followed by the ilio-femoral, ilio-iliac and axillo-femoral with 16, 12 and 10 cases respectively. Carotid endarterectomy 23 cases with 21.1%. Aortic aneurysms 6 cases for 2.9%.

It should be noted the presence of 5 cases diagnosed as Eagle Syndrome (Compression of the carotid artery by a long and developed styloid process) which underwent resection of the process and repair of vascular damage Regarding the level of risk based on IN / L in the pre-surgical stage, 75 cases were evaluated as low (<2), while the intermediate (2-3) 76 and the high (> 3) with 53, totaled 129 cases for 63.2%, which shows the level of risk of cases with peripheral arteriopathies that require a surgical procedure, revascularization or not.

The analysis of these risk levels in the postoperative period showed the highest number of cases in the low level with 112 for 54.9%, demonstrating the adequate selection of treatment. The intermediate risk level with 58 and the high level with 34 respectively for 92 cases in total allowed us to follow up the cases, their degree of response and assessment of prediction of complications.

With the analysis of the INL in a serial way, we were able to evaluate the level of risk and the effectiveness of the surgical procedure performed.

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Neutrophile-Lymphocyte Index in Patients with Peripheral Arterial Disease
Vascular Surgery Service
2017-2020.
Analysis of the Indices by Date of Carried Out and # Of Cases

Table 3

INL	Pre. Operative	24 Hours	15 days	30 days	60 days	90 days	More 365 days
0-1	24	21	26	38	43	44	55
1-2	51	70	88	115	124	128	130
2-3	76	35	38 **sepsis (5)**	25	18	18	3 Thrombosis Late 4
3-4	14	31 **Thrombosis acute 2**	25	15	13	10 **2 sepsis Prótesis**	7
4-5	16	32	19 **Thombosis (1)**	8	4 **Thrombosis (1)**	0	5
More than 5	23	15 **D**eceased (2)	8	**2 Thrombosis** (1early) **3**	2	4 Amputated **(2)**	3 Occlusion C. Mothers **Amputed (1)**
Total	204	204	204	204	204	204	204

Fte.C.H.

The analysis of the sensitivity and specificity of different levels of the neutrophil / lymphocyte index made it possible to generate 3 risk groups: - low risk with a neutrophil / lymphocyte ratio <2 -Intermediate risk with a neutrophil / lymphocyte ratio between 2 - 3 - high risk with a neutrophil / lymphocyte ratio> 3.

Regarding the N / L index, in the pre-operative low risk 36.7%, intermediate 37.7% and high risk 25.4%, low risk with 54.9%, a decrease in intermediate at 28.4% and high at 16.6% In the first 24 hours after revascularization, a greater number of cases with increased INL was observed, returning to low-risk levels after 15 days, remaining in this range at 30, 60, 90 and more than 360 days after revascularization.

It should be noted that in those cases in which complications occurred, the INL rose above 3, as well as In the two amputees, the INL rose above 5. In general, the longer the surgery time and the low-risk indexes, the cumulative patency was higher in number of cases, as well as when the index showed an increase at high risk, complications became evident

The analysis of the N / L indices in the pre-operative phase, 75 cases for 36.7% was less than 2, considered as low. The intermediate, that is, between 2-3 was presented in 76 cases for 37.2%, while the high risk level was presented in 53 cases distributed in: level 3-4, 14 cases, between 4-5 16 cases and in more than 5, 23 cases. It should be noted that when the INL level is so high, mortality and morbidity rise regardless of the procedure to be performed. The postoperative period was divided into: at 24 hours, at 15, 30, 60, 90 and 365 days after the operation, highlighting that in general with the therapeutic procedure carried out, the low INL levels were increasing. Complications appeared at the intermediate level (INL 2-3) at 15 days with 5 sepsis and with more than 365 days with 4 late thromboses, which would explain the progressive nature of arteriosclerosis, maximum when the indicated level of prevention is not performed. At high risk levels (INL> 3) at 24 hours 2 acute thromboses, another at 15 and 60 days, with 2 prosthesis sepsis at 90 days. When the INL level reached 5 or more, at 24 hours there were 2 deaths, at 30 days, 2 thromboses, at 90 days 2 amputees and with more than 365 days, 1 acute occlusion, 1 amputee. As can be seen, the most frequent complication was thrombosis of the revascularization procedure. It should

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be noted that in the period studied, mortality was 0.98 with two deaths in the first 24 hours of the procedure performed where the IN / L was always above 5. A cumulative patency of 89.7% was achieved.

VI. Discussion

Currently all the authors reviewed [1-12] coincide in pointing out the participation of neutrophils and lymphocytes in the inflammatory processes that participate in the etiology, presentation and evolution of many diseases, where their inflammatory character determines their levels of lethality and morbidity and mortality [5-6]. Based on these concepts, it has been determined that the measurement of the neutrophil-lymphocyte index (IN / L) is a determining factor as a risk marker for these entities and that its knowledge, monitoring and control of existing endothelial dysfunction enables us a higher quality action in the control of these diseases. Authors such as Corriere, Halazun, Aquino Viza and Suilbert Rodríguez [5-8] they set the index values to: less than 2 and classify it as low risk; between 2 and 3 as medium or intermediate risk and above 3 as high risk. Rodríguez Blanco [8] in his work concludes that the increase in the N / L index greater than 2 is directly related to the presence and severity of coronary artery disease, similar results achieved in this study but related to peripheral artery disease (8). C Chan et al. [3] show the prognostic value of the neutrophil / lymphocyte index in patients with critical ischemia in the lower limbs and point out that its increase above 2 is a determining factor in the appearance of complications in these cases with peripheral arterial disease in critical ischemia. Our series shows identical results since complicated cases, which failed and lost their cumulative patency, coincided with the elevation of the index in values above 2 We consider that the continued study of the neutrophil-lymphocyte relationship will allow us to establish indices for our population that requires revascularization for peripheral arterial disease. Its prognostic value is extremely useful in the prevention of morbidity and mortality and amputations, and in turn allows us to predict reaching high levels of cumulative patency. The results obtained, its low cost since it does not require expenses in additional studies, reagents or diagnostic means and the ease in its interpretation, endorse the method and make it extremely useful in the Vascular Surgery services of the Country. All these complications appeared independent of the follow-up of all cases with levels of anti-aggregation and / or anticoagulation, warm-prophylaxis that is part of the care protocol for these patients.

Conflicts of Interest and Level of Participation

There are no conflicts of interest between the authors of the work.

Participation Level

Dr. Rubén Tomas Moro Rodríguez.

Main author of the work and promoter of the same

Dr. José Luis Valdés Cantero.

He collaborated in the follow-up of the cases in external consultation and in admitted cases, as well as in the preparation of the work

Dra. Daylin Ricardo Olivera participated in the collection of the data and in the preparation of the work

Dra. Ana María Correa participated in carrying out the laboratory studies, data collection and preparation of the work

Dr. Juan E. Yara Sánchez. He participated as an advisor and consultant of the work

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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.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

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



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Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- 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.

Title page:

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.

The Administration Rules

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Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
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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