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Journal of Wazir Muhammad Institute of Paramedical Technology (JWMIPT) is the pioneer biannually publishing peer-reviewed journal dedicated to the clinical and professional needs of paramedics. It is a vital resource for helping paramedics to enhance their professional knowledge and stay ahead of all their continuing professional development requirements. JWMIPT is the sister journal of "Journal of Gandhara Medical and Dental Sciences JGMDS", HEC-approved and is published on quarterly basis. Paramedics are legally and professionally obliged to uphold their patients right to dignity, respect and autonomy. This journal promote the science of pre-hospital care study, clinical practice, service delivery, training, administration and respond to professional interest of the multi - disciplinary care.

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PARAMEDICAL SERVICES IN MODERN HEALTH CARE SYSTEM

Inayat ur Rehman
Dean
Wazir Muhammad Institute of Paramdedical Technology, Peshawar

A paramedic or health care provider is a health professional that provides rapid response, emergency medical assessment, treatment and care to critically ill patients[1]. The word Paramedic is a combination of two words; para means "along the side of" and *medic* means "physician", so a paramedic works as an extender of the physician. He works under the direct supervision of a medical expert and is considered a “delegated practitioner”.

Paramedical service is crucial for the effective running of the modern health care system and is the lifeline of the health sector[2]. Paramedics are trained, equipped and required to give emergency services not just in form of first aids, but may also include medical attention that may not warrant taking the patients to the hospital[3]. Over the past decade, paramedic scope of practice and clinical responsibilities has expanded significantly. Advanced clinical interventions previously carried out by physicians such as ultrasound, thoracotomy and endotracheal intubation are now becoming part of the health care professional. This concentrated experience in the use of highly technical, mechanical and electronic equipment and their availability to the patient make such personnel indispensable as assistants to physicians[4].

The dynamic nature of paramedics in terms of clinical practice demands continuous recognition and evaluation of the literature. Active research is essential for the translation of evidence into practice and education and is an integral part of the modern paramedic programs offered within higher education institutions. Thus there is an urgent need to launch a peer review journal in the field of paramedics that will publish high standard scientific articles and will be available to researchers and institutes. The scope of this journal includes both basic and clinical research including original articles, reviews, clinical case presentations and case reports. It aims to contribute to a better understanding of the disease and provide a reference for health professionals and researchers.

REFERENCES:

1. Olaussen A, Semple W, Oteir A, Todd P, Williams B. Paramedic literature search filters: optimised for clinicians and academics. BMC Med Inf Decis Making. 2017;17(1):1-6.

2. Allen D. Prioritising the mobilisation of emergency medical services: patient making at the healthcare gateway. J Health Organ Manage. 2021.

3. Owolabi Joshua O, Tijani Ahmad A. Paramedical sciences and services: the need to develop effective systems in Africa. World J Pharm Med Res. 2017;3(9):30-3.

4. Sheridan S. Paramedic health status, fitness and physical tasks: a review of the literature. Australas J Paramed. 2019;16:1-7.

DENGUE FEVER ASSOCIATED WITH CLINICAL AND LABORATORY PROFILE OF PATIENTS IN DISTRICT PESHAWAR

Muhammad Idrees[1]

ABSTRACT:

OBJECTIVES:

This study aims to evaluate the clinical and laboratory profile of dengue patients attending the teaching hospitals in Peshawar, Pakistan.

METHODOLOGY:

Patients from different regions of Khyber Pakhtunkhwa with suspected DF infection admitted at Khyber Teaching Hospital and Kuwait Teaching Hospital, Peshawar from October 2017 to January 2018 were included in this study. A total of 50 patients both males and females were included. Hematology Analyzer Sysmex X21 for Complete Blood Count (CBC), COBAS 501 for Chemical Analysis and Immunochromatographic Diagnostic Test (ICT) kits were used in this study. Inform consent was taken from the patients and debriefed. Statistical analysis was performed by using SPSS version 22.

RESULTS:

Seventy four Percent dengue patients were suffering from dengue fever (DF) followed by 24% of patients with dengue hemorrhagic fever (DHF) and only 02% with dengue shock syndrome (DSS). Most of the patients with abnormal blood chemistry.

CONCLUSION:

Our findings suggest that these patients have mild to moderate form of Dengue Fever and severity was observed in only few cases.

KEYWORDS: *Dengue Fever, Liver Function Tests, Platelets Count, Hepatomegaly, Viraemia*

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INTRODUCTION:

Dengue is one of the important causes of febrile diseases in the subtropical and tropical areas. Malaria and dengue are mosquito-transmitted illnesses which globally causes the arboviral illness[1,2]. World Health Organization (WHO) categorized the —severe denguell as Dengue Hemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS) in 2009[3]. The dengue symptoms are fever, ocular pain, headache, muscle or joint pains, cutaneous rash, bleeding manifestations and reduced leukocyte count. The average number of dengue reported per annum has amplified radically. In spite of the scarce surveillance of patients diagnosed from the tropical underdeveloped countries[1,4]. The reasons could be the persistent development with unhygienic conditions, decrepit health arrangements which could lead the illness load subsequently[2]. The most common affected organ in this disease is the liver. dengue has almost entire properties of a hepatic disease initiating from asymptomatic raised transaminase points to Acute Liver Failure (ALF). The Dengue Virus (DENV) is

categorized into four serotypes which belongs to Flaviviridae family and genus Flavivirus[5]. Globally, all of them are subtle in subtropical/tropical areas[1,6]. This dengue virus can be spread through the species Aedes Aegypti, or Aedes Albopictus. The Aedes Aegypti mosquito (anthropophilic nature) often bites several times before finishing oogenesis as it is adapted for urban thriving[3, 7]. Throughout the 5-day retro of human viremia, it taints the host and moves from mid-gut to the salivary glands of the insect. The life-cycle of dengue virus inside the mosquito after eight to twelve day, under high temperatures, the mosquito turn out to be infectious, and can spread the virus to another host[1, 3]. Mosquito cell cultures with persistent infection can be exhibited with high concentrations of virus[8]. Dengue virus is an RNA virus with a single-stranded positive-sense RNA acting as the genome, having an envelope and icosahedral in shape. The virus also encodes for seven non-structural (NS) proteins one of which (NS1) has found use as a diagnostic antigen in initial phases of the disease. The E glycoprotein plays a crucial role in the biology of the DENV, starting from receptor binding to immune response[1,9]. World Health Organization categorized the dengue into dengue fever (DF), dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS)[10,11] High Fever, thrombocytopenia (≤100×109/L), bleeding manifestations, evidence of plasma leakage, tachycardia and low pulse pressure (<20 mmHg)[3]. Dengue virus is now endemic in Pakistan, circulating throughout the year with a peak incidence in the post monsoon period. Recent flood in Pakistan made the situation worse. With DENV infection, high level of viraemia is linked with engrossment of various human organs (liver, brain) when it is severe[12]. This study aims to find out the clinical/laboratory profile of patients suffering from dengue fever at KPK province of Pakistan. The study also attempts to find out the incidence of Dengue Fever (DF), Dengue Hemorrhagic Fever and Dengue Shock Syndrome (DSS) in Khyber Pakhtunkhwa, Pakistan.

METHODOLOGY:

Patients from different regions of Khyber Pakhtunkhwa especially Peshawar with suspected DF infection admitted and treated at Khyber Teaching Hospital and Kuwait Teaching Hospital Peshawar from October 2017 to January 2018 were included in this study. Prior to the study, approval from the Research Committee Chairman of Gandhara University Peshawar, Department of Medical Laboratory Technology (MLT), Wazir Muhammad Institute of Paramedical Technologies (WMIPT) was taken. Materials and equipment that were used includes Hematology Analyzer Sysmex X21 for Complete Blood Count (CBC), COBAS 501 for Chemical Analysis, syringes, alcohol swab, tourniquet, and Immunochromatographic Diagnostic Test (ICT) Kits. Machines were fully automated equipped with barcode reading system. In this cross-sectional study, a total of 50 patients both males and females were included. Cases of dengue were selected irrespective of age and sex. On the basis of following clinical findings; fever associated with chills and rigors, headache, myalgia, retro orbital pain, vomiting, weakness and fatigue, Pruritus, skin rashes, joint pain, diarrhea, abdominal pain, anorexia, malaise and any other symptoms and laboratory profile i.e. leucopenia, thrombocytopenia or circulatory collapse in whom tests for dengue fever, NS1 antigen or IgM serology or both were positive. Leucopenia was defined as total white cell count less than 4000×109/L and thrombocytopenia if platelet count was less than 150×109/L. The dengue fever cases were further sub-classified into DF, DHF and DSS according to World Health Organization (WHO) definition criteria of dengue infection[10,11]. Patients having same sign symptoms but diagnosed with NS1 Negative Antigen were excluded from the study. The blood was collected aseptically. The area was cleaned with antiseptic such as 70% Alcohol (Alcohol swab) before pricking. Venous blood samples were collected through venipuncturing technique in Gel Tubes and Ethylenediamine tetra-acetic acid (EDTA) Tubes. After collection samples in the Gel Tubes were centrifuged at 4500 rpm for 05 minutes to separate serum. EDTA tubes were placed on mixer for 5 minutes. Samples were labeled with the patient registration number and detail i.e. age, sex along with history of each individual. Samples were stored at 25-30°C. For chemical analysis, analyzer used was COBAS 501 from Roche Diagnostic, which works on the principle of Electric Photometer. Hematology analyzer, Sysmex

X21 used works on the principle of fluorescent flow cytometer. ICT kits works on principle, high specific affinity of an antibody for its antigen. It detects the distribution of a given protein or antigen in tissues or cells. Statistical analysis was performed by using SPSS version 22. Descriptive statistics were used to analyze the data.

RESULTS:

In our study, 28 (56%) were males and 22 (44%) were females.

Table 1: Platelets Count in Dengue (DF, DHF, DSS) Patients (Onset)(n=50)

Platelet Count 10^9/L	DF	DHF	DSS	Total
<50000	13 (26%)	12 (24%)	01 (02%)	26 (52%)
50000-100000	13 (26%)	-	-	13 (26%)
100000-150000	09 (18%)	-	-	09 (18%)
150000-20000	02 (04%)	-	-	02 (04%)
>200000	-	-	-	-

Table 2: IgM and IgG Results (Onset) (n=30)

Results	IgM (n=30)	IgG(n=30)
Positive	21 (70.0%)	12 (40.0%)
Negative	09 (30.0%)	18 (60.0%)

Table 3: TLC Count in Dengue (DF, DHF, DSS) Patients (Onset) (n=50)

TLC Count/ cmm	Gender			DHF	Total Patients
	Male	Female	DF		
1.1-2.0	01	01	01	01	02
2.1-3.0	03	06	06	03	09
3.1-4.0	09	03	08	03	12
>4	13	14	22	05	27
Total	26	24	37	12	50

Table 4 : Clinical Signs and Symptoms of Dengue Patients (n=50)

Signs/Symptoms	Onset of Disease	After one Month
Fever	49 (98.0%)	38 (76.0%)
Malaise	46 (92.0%)	26 (52.0%)
Vomiting	45 (90.0%)	30 (60.0%)
Lethargy/Weakness	43 (86.0%)	35 (70.0%)
Anorexia Myalgia	42 (84.0%)	15 (30.0%)
Joint Pain/Arthralgia	40 (80.0%)	28 (56.0%)
Chills/Rigors	38 (76.0%)	13 (26.0%)
Abdominal Pain	36 (72.0%)	10 (20.0%)
Headache	32 (64.0%)	32 (64.0%)
Retro Orbital Pain	31 (62.0%)	04 (08.0%)
Skin Rashes	29 (58.0%)	34 (68.0%)
Pruritus	25 (50.0%)	07 (14.0%)
Sore Throat	19 (38.0%)	28 (56.0%)
Bleeding	15 (30.0%)	05 (10.0%)
Diarrhea	12 (24.0%)	08(16.0%)
Sweating	11 (22.0%)	05 (10.0%)
Cough	08 (16.0%)	05 (10.0%)
Hypertension	04 (08.0%)	06 (12.0%)
Gastritis	03 (06.0%)	02 (04.0%)
Vasoconstriction	01 (02.0%)	02 (04.0%)
Spastic Neck Pain	01 (02.0%)	-
Dyspepsia	01 (02.0%)	02 (04.0%)
Splenomegaly	01 (02.0%)	-
Hepatomegaly	01 (02.0%)	-

DISCUSSION:

Our study describes the clinical features, investigations, and outcome of dengue fever in patients. According to the report of World

Health Organization (WHO) annually 50-100 million dengue infections occur and estimated that two-fifths of the world population is at risk of this infection[12]. In china[13], the dengue fever was categorized by the fever (98.1%), headache (75.7%), malaise (76.0%), and asthenia (74.3%); bleeding (25.8%), plasma leakage (8.3 %) and hepatosplenomegaly (17.5%) were reported. A study was conducted to evaluate the persistent symptoms of dengue in patients and they reported that fever, dermatological manifestations, and pain were the most persistent symptoms and after the one month of onset the 55.7 percent patients had dengue related complaints[14]. Similarly, other studies also reported higher persistency of symptoms after the onset[15]. In our study, most of the symptoms including fever (76.0%), vomiting (60.0%), Lethargic/weakness (70.0%), joint pain (56.0), skin rashes (68.0%), sore throat (56.0%) and headache (64.0%) were reported after one month of the onset. In this study it is noted that mostly patients have dengue fever (DF) and a study conducted in Rawalpindi by Rehman et al also reported the similar findings[16]. A Study showed that mostly patients have dengue fever which is the (24%) of study population followed by DHF patients (08%)[17]. In our study, (26%) of the patients had dengue fever and (24%) had DHF. The patients having platelets count less than 50000 were maximum in number (52%) with the males in predominance. A total of 30 patients were IgM positive (70%) compared to IgG positive patients (40%). Patients with TLC count above 4000 were 14 females and 15 males and most of them have DF and this strengthens the earlier findings[18,19]. Our results further show that the blood chemistry of these patients was abnormal, and it support the previous results[20,21].

CONCLUSION:

Our findings suggest that patients had a mild to moderate presentation of dengue fever with persistence dengue symptoms last up to one month. Understanding the risk factors helps in predicting the mortality, which helps in management and better outcome of the fever.

CONFLICT OF INTEREST: None

FUNDING SOURCES: None

REFERENCES:

1. Guzman MG, Halstead SB, Artsob H, Buchy P, Farrar J, Gubler DJ, et al. Dengue: a continuing global threat. Nat Rev Microbiol. 2010;8: S7-16.
2. Guzmán MG, Kourí G. Dengue: an update. Lancet Infect Dis. 2002; 2:33-42.
3. World Health Organization. Dengue: guidelines for diagnosis, treatment, prevention and control. World Health Organization: Geneva; 2009.
4. Thomas SJ, Strickman D, Vaughn DW. Dengue epidemiology: virus epidemiology, ecology, and emergence. Adv Virus Res. 2003; 61:235-89.
5. Westaway EG, Brinton MA, SYa G, Horzinek MC, Igarashi A, Kääriäinen L, et al. Flaviviridae. Intervirology. 1985;24(4):183-92.
6. Wang E, Ni H, Xu R, Barrett AD, Watowich SJ, Gubler DJ, et al. Evolutionary relationships of endemic/epidemic and sylvatic dengue viruses. J Virol. 2000; 74:3227-34.
7. Bäck AT, Lundkvist A. Dengue viruses - an overview. Infect Ecol Epidemiol. 2013;3.
8. Ooi EE, Gubler DJ. Dengue virus-mosquito interactions. In: Hanley KA, Weaver SC, editors. Frontiers in dengue virus research. Norfolk, UK: Caister Academic Press; 2010. 143-56.
9. Pang X, Zhang M, Dayton AI. Development of dengue virus replicons expressing HIV-1 gp120 and other heterologous genes: a potential future tool for dual vaccination against dengue virus and HIV. BMC Microbiol. 2001;1(1):1-9.
10. World Health Organization. Dengue hemorrhagic fever: diagnosis, treatment, prevention and control. World Health Organization: Geneva; 1997.

11. Lee LK, Gan VC, Lee VJ, Tan AS, Leo YS, Lye DC. Clinical relevance and discriminatory value of elevated liver aminotransferase levels for dengue severity. PLoS Negl Trop Dis. 2012;6: e1676.
12. Screaton G, Mongkolsapaya J, Yacoub S, Roberts C. New insights into the immunopathology and control of dengue virus infection. Nature Reviews Immunology. 2015 Dec;15(12):745-59.
13. Yong HX, Xia MH, Feng WH, Hua DY, Jia SU, Le LX, Yan TX, Peng MH, Can ZB, Hong ZQ, Min CH. Outbreak of dengue fever in central China, 2013. Biomedical and Environmental Sciences. 2014 Nov 1;27(11):894-7.
14. Tiga-Loza DC, Martínez-Vega RA, Undurraga EA, Tschampl CA, Shepard DS, Ramos-Castañeda J. Persistence of symptoms in dengue patients: a clinical cohort study. Transactions of The Royal Society of Tropical Medicine and Hygiene. 2020 May 7;114(5):355-64.
15. Teixeira LD, Nogueira FP, Nascentes GA. Prospective study of patients with persistent symptoms of dengue in Brazil. Revista do Instituto de Medicina Tropical de São Paulo. 2017;59.
16. Rehman MM, Zakaria M, Mustafvi SA. Clinical and laboratory profile of dengue fever patients admitted in combined military hospital rawalpindi in year 2015. Pakistan Armed Forces Medical Journal. 2017 Aug 30;67(4):496-501.
17. dos Santos Oliveira RA, Cordeiro MT, de Moura PM, Baptista Filho PN, de Mendonça Braga-Neto U, Júnior ET, Gil LH. Serum cytokine/chemokine profiles in patients with dengue fever (DF) and dengue hemorrhagic fever (FHD) by using protein array. Journal of Clinical Virology. 2017 Apr 1;89:39-45.
18. Nagaram PP, Piduru P, Munagala VK, Matli VV. Clinical and laboratory profile and outcome of dengue cases among children attending a tertiary care hospital of South India. 2017;4(3):7.
19. Hasan Z, Razzak S, Farhan M, Rahim M, Islam N, Samreen A, et al. Increasing usage of rapid diagnostics for dengue virus detection in Pakistan. J Pak Med Assoc. 2017;67(4):548-51.
20. Kim PT, Duoc VT, Gavotte L, Cornillot E, Nga PT, Briant L, et al. Role of aedes aegypti and aedes albopictus during the 2011 dengue fever epidemics in Hanoi, Vietnam. Asian Pac J Trop Med. 2015;8(7):543-8.
21. Suleman M, Faryal R, Aamir UB, Alam MM, Nisar N, Sharif S, et al. Dengue outbreak in Swat and Mansehra, Pakistan 2013: an epidemiological and diagnostic perspective. Asian Pac J Trop Med.2016;9(4):380-4

CONTRIBUTORS
1. **Muhammad Idrees -** Concept & Design; Data Acquisition; Data Analysis/Interpretation; Drafting Manuscript; Critical Revision; Supervision; Final Approval

DIABETIC FOOT INFECTION DUE TO PSEUDOMONAS AERUGINOSA, PESHAWAR

Muhammad Zeeshane Khan[1]

ABSTRACT:

OBJECTIVES:

The objectives of this study were to evaluate the diabetic foot infection due to pseudomonas aeruginosa in Peshawar.

METHODOLOGY:

A tenth month study was conducted at Khyber Teaching Hospital Peshawar from April 2019 to February 2020. All diabetic foot patients, admitted at surgical ward with outpatients were also enrolled in the study. The study was conducted on 109 patients with both genders.

RESULTS:

The result of male to female ratio was equal. Out of 109, fifty-five (55) were male and fifty-four (54) were female. A total of 109 bacteria were isolated from those patients. Age ranges from 40 years to 85 years. All 109 patients is present with 1 pathogen, none of it is present with multiple pathogen. Gram-positive organisms were found only in 37 (32%) patients, while other are grams negative. Staphylococcus aureus was most prominent isolated bacteria in 37 (32%) patients, followed by E.coli 29 (27%), enterobacter 20 (18%), pseudomonas 12 (11%), citrobacter species 12 (11%), and proteus species in 01 (01%) patient.

CONCLUSION:

This study concluded that Staphylococcus is most dominant gram-positive organism isolated about 32%, followed by other gram-negative organism. Patient ages between 51-60 were most in number i.e. 43 out of 109. The mean age is 54±5.

KEYWORDS: *Staphylococcus, Gram-positive, E. coli, Bacteria, Antibiotics*

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INTRODUCTION:

Diabetes mellitus is long term; serious chronic condition that occurs when raised level of glucose in blood occurs and their body cannot produce enough insulin. Insulin deficiency leads to high levels of blood glucose (hyperglycemia), which is the clinical sign of diabetes. Diabetes is a major health issue today that has gained alarming level, nearly half a billion people are affected with diabetes worldwide[1]. There is strong association between the foot problems and diabetes. World Health Organization reported that nineteen million of the India is diagnosed with diabetes and in year 2025 it would be increase to fifty-seven million[2]. The Symptoms of foot infection is the fever and leukocytosis/pus secretions. Other local symptoms are warmth, redness, pain, and tenderness[3]. It can affect people at any age, but usually develops in children or young adults[4]. In Diabetes at early stages the

symptoms are reduced, and the hyperglycemia level increases gradually, so usually left undiagnosed[5]. There should be increase or normal level of insulin in this form of diabetes. High insulin level can be due to the high blood glucose level which indicates that β-cell functioning is normal[6]. This results in disturb level of insulin secretion and resistance. Prolonged complications of diabetes include peripheral neuropathy with foot ulcers risks, retinopathy with potential loss of vision amputations, and Charcot joints, nephropathy leading to renal failure and autonomic neuropathy causing gastrointestinal, genitourinary, and cardiovascular symptoms and sexual dysfunction[7]. Diabetic patients usually come across with the foots infection and is difficult to manage the infection[8]. The most affected area is the lower limbs, around fifteen per cent of the patients are diagnosed with foot ulcer for their life time[9]. These problems causes disability and hospitalization[6,10].

METHODOLOGY:

A tenth month study is conducted at Khyber Teaching Hospital Peshawar from April 2019 to February 2020. All the patients have diabetic foot admitted at surgical ward and OPD were enrolled in the study. The study was carried on 109 patients with diabetic foot ulcer. Pus or discharges from the ulcer base and debrided necrotic tissue were obtained. Sterile swab samples were obtained, following the removal of debris-containing tissues and cleansing the wound and peri-wound with sterile normal saline. Deep tissue samples were obtained from the viable and non-viable tissue junction using a curette or punch biopsy material. Bone specimens were obtained during surgical debridement using a rongeur whenever possible. The specimens were taken immediately to the microbiology laboratory and processed without any delay. The specimens were subjected to Gram staining and were simultaneously inoculated on blood agar and MacConkey agar for isolation of aerobic bacteria. After 24 hours incubation at 37°C, the bacterial isolates were identified based on standard bacteriological methods. Specimens were incubated at 37°C for 24 to 48 hours on eosin methylene blue, chocolate and 5% sheep blood agars. The laboratory performed microorganism identification and antibiotic sensitivity testing.

The microorganisms were identified by standard methods based on the morphology of the colonies, microscopic appearance of bacteria, Gram staining, and by using rapid Gram-positive and negative identification kits.

RESULTS:

The result of male to female ratio was equal. Out of 109, 55 were male and 54 were female. The age ranges from 40 to 85 years. Bacteria were isolated from those patients. All 109 patients presented with 01 pathogen, none of is present with multiple pathogens.

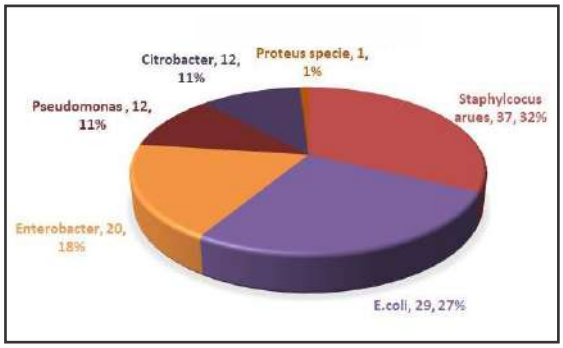

Figure 1: Bacteria Isolated from Diabetic Foot Ulcers

DISCUSSION:

Diabetic patients often having chronic non-healing foot ulcers due to several underlying factors such as neuropathy, peripheral arterial diseases and high plantar pressures[11]. Such chronic long-standing ulcers are more prone for infection, which further delays the wound healing process. A wide range of bacteria can cause infection in these patients[12]. In this study, gram-negative bacteria were the predominant pathogens. Staphylococcus aureus was most prominent isolated bacteria in 37 (32%) patients, followed by E.coli 29 (27%), Enterobacter 20 (18%), pseudomonas 12 (11%), citrobacter species 12 (11%), and proteus species in (01%) patient. In Earlier studies have documented gram-positive bacteria as the predominant organisms associated with diabetic foot infections[13]. Therefore, there seems to be a changing trend in the organisms causing diabetic foot infections, with gram-negative bacteria replacing gram-positive bacteria as

commonest agents[14]. All patients have mono microbial infection; poly microbial infection was observed in none of the patient. It is concluded that bacteria are one of leading cause of diabetic foot infection[15,16]. We also assume that monotherapy may not be the best management for causal microbes. Thus, choosing empiric antibiotic therapy for diabetic foot infections can be based on a number of conditions: (a) the severity of infection, (b) the extent and depth of involvement of infection, and (c) the local pattern of bacterial etiology and their antibiogram[17]. The infection can be treated with the following amoxy/Liavlani acid ampicillin/sulbactam, and cefuroxime. If the infection is severe and involves deep tissue and bone, caftazidine, imipenem, and some are meropenem, and levofloxacin are more appropriate, with their sensitivities reaching 98-100%[18].

CONCLUSION:

Our study concluded that Staphylococcus is most dominant gram-positive organism followed by another gram-negative organism. As P. aeruginosa infection may be that pathogen which exhibit high degree of resistance to a broad spectrum of antibiotics.

CONFLICT OF INTEREST: None

FUNDING SOURCES: None

REFERENCES:

1. Umadevi S, Kumar S, Joseph NM, Easow JM, Kandhakumari G, Srirangaraj S, et al. Microbiological study of diabetic foot infections. Indian J Med Spec. 2011;2(1):12-7.
2. Coffey L, Mahon C, Gallagher P. Perceptions and experiences of diabetic foot ulceration and foot care in people with diabetes: a qualitative meta-synthesis. Int Wound J. 2019;16(1):183-210.
3. Mishra SC, Chhatbar KC, Kashikar A, Mehndiratta A. Diabetic foot. BMJ. 2017;359:j5064.
4. Ramakant P, Verma AK, Misra R, Prasad KN, Chand G, Mishra A, et al. Changing microbiological profile of pathogenic bacteria in diabetic foot infections: time for a rethink on which empirical therapy to choose?. Diabetologia. 2011;54(1):58-64.
5. Chapman S. Foot care for people with diabetes: prevention of complications and treatment. Br J Community Nurs. 2017;22(5):226-9.
6. Mullan L, Driscoll A, Wynter K, Rasmussen B. Barriers and enablers to delivering preventative and early intervention footcare to people with diabetes: a scoping review of healthcare professionals' perceptions. Aust J Primary Health. 2020;25(6):517-25.
7. Pankhurst CJ, Edmonds ME. Barriers to foot care in patients with diabetes as identified by healthcare professionals. Diabetic Med. 2018;35(8):1072-7.
8. Huda N, Sukartini T, Pratiwi NW. The impact of self-efficacy on the foot care behavior of type-2 diabetes mellitus patients in Indonesia. J Ners. 2019;14(2):181-6.
9. Abdulrazak A, Bitar ZI, Al-Shamali AA, Mobasher LA. Bacteriological study of diabetic foot infections. J Diabetes Complications. 2005;19(3):138-41.
10. Lipsky BA. Medical treatment of diabetic foot infections. Clin Infect Dis. 2004;39(Supplement_2):S104-14.
11. Shanmugam P, Jeya M, Linda-Susan S. The bacteriology of diabetic foot ulcers, with a special reference to multidrug resistant strains. J Clin Diagn Res. 2013;7(3):441-5.
12. Lipsky BA, Berendt AR, Embil J, De-Lalla F. Diagnosing and treating diabetic foot infections. Diabetes/Metab Res Rev. 2004;20(S1):S56-64.
13. Shankar EM, Mohan V, Premalatha

G, Srinivasan RS, Usha AR. Bacterial etiology of diabetic foot infections in South India. Eur J Intern Med. 2005;16(8):567-70.

14. Machado C, Teixeira S, Fonseca L, Abreu M, Carvalho A, Pereira MT, et al. Evolutionary trends in bacteria isolated from moderate and severe diabetic foot infections in a Portuguese tertiary center. Diabetes Metab Syndr: Clin Res Rev. 2020;14(3):205-9.
15. Miyan Z, Fawwad A, Sabir R, Basit A. Microbiological pattern of diabetic foot infections at a tertiary care center in a developing country. J Pak Med Assoc. 2017;67(5):665-9.
16. Khawaja N, Abu-Shennar J, Saleh M, Dahbour SS, Khader YS, Ajlouni KM. The prevalence and risk factors of peripheral neuropathy among patients with type-2 diabetes mellitus; the case of Jordan. Diabetol Metab Syndr. 2018;10(1):1-10.
17. Gogia S, Rao CR. Prevalence and risk factors for peripheral neuropathy among type-2 diabetes mellitus patients at a tertiary care hospital in coastal Karnataka. Indian J Endocrinol Metab. 2017;21(5):665-9.
18. Chandrashekar S, Muralidhar S. A study on the prevalence of risk factors and presence of diabetic foot ulcers in T2DM patients in KR Hospital, Mysuru. Int Surg J. 2017;4(9):2983-6.

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SPINAL ANESTHESIA (SA) AND PATIENT SATISFACTION IN CESAREAN SECTION (CS); A COMPARATIVE STUDY

Tanzila Pervez[1]

ABSTRACT:

OBJECTIVES:

To determine satisfaction of the mothers regarding SA for CS in elective and emergency procedures at District head Quarter (DHQ) Hospital Karak.

METHODOLOGY:

It is a cross-sectional study conducted on 175 female patients were selected who had CS under SA through elective and emergency procedure regarding their satisfaction at DHQ Hospital Karak. The time duration was from December 01st 2019 - March 31st, 2020. Data was collected through a constructed questionnaire with consent of these patients. Data was entered in SPSS version 26 and was analyzed using chi-square test.

RESULTS:

A total of 175 patients were selected in the study. The overall satisfaction of SA for CS divided into 111 (63.4%) of patient were satisfied with elective CS with the chi-square test value of 8.10. Furthermore, the backpain was associated with both the procedures and were showing increase from average age 20-24 years (29.5%) and (69.2%) for 30-34 years, simultaneously. The results showed significance of p-value 0.001for post-operative back pain.

CONCLUSION:

It was concluded that the patient had better experience with the elective procedure rather than emergency procedure. The pain was also a factor that was involved in provoking the symptoms (pain, nausea) that have negatively affecting patient perspectives about SA for CS.

KEYWORDS: *Spinal Anesthesia(SA), Patient Satisfaction, Caesarean Section(CS), Technique*

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INTRODUCTION:

Elective or emergency CS have morbidity and mortality with different outcomes for maternal and new-borns. The literature defines an elective CS as an operation performed within working hours (typically between 08:00 and 17:00) with an anesthesia team, the neo-natal care team and the entire operation team ready at the scheduled time[1]. The mortality associated with hemorrhage and infection caused mainly by cesarean section CS has dramatically declined with the development of infection control measures, blood transfusions, and anesthesia techniques. Today, cesarean delivery is considered a safe operation with increasing prevalence around the world. It is estimated that around 750,000 CS operations are performed

annually in Turkey[2]. Emergency surgeries are associated with greater number of surgical complications than elective surgeries . Similarly, emergency CS is likely associated with an increased risk of complications when compared to elective CS[3]. SA for CS is an old and well-established method. It was first used in obstetrics in 1901 for pain relief during vaginal delivery and became popular for CS because of its rapid onset and a high frequency of successful blockade[2]. The advantages of regional anesthesia include an awake mother, minimal postpartum depression, avoidance of the risks of general anesthesia (especially failed intubation and aspiration pneumonitis). SA specifically has the advantages of its simplicity, small drug dose, low failure rate and rapid onset[4]. SA for CS has become increasingly popular and the recent decade has been the preferred technique for most anesthetists. The choice of anesthesia for any CS depends on multiple factors, the indication of surgery, the urgency of the operation, and patient's as well as surgeon's desire. Anesthetic, first choose the method that is believed to be safest and most comfortable for the mother, least depressant to the newborn and provides the optimal working conditions for the obstetrician. SA for CS has become increasingly popular and the recent decade has been the preferred technique for most anesthetists, patient satisfaction is one of the meaningful indicators of patient experience of health care services. Patient satisfaction is a complex, multidimensional concept, subjective and difficult outcome to measure for the quality of care and also involve emotional, physical, socio-cultural factors[4] based on patient expectations[5]. Asking patients what they think about the care and treatment they have received is an important step towards improving the quality care and ensuring local health services are meeting patients' needs. In fact, satisfaction is measured by patients through evaluation and assessment of the experience after consuming a good service of care by health providers[6,7]. American Society of Anesthesiologists (ASA),[8] patient satisfaction guidelines stated that in the future, it is likely that payment for anesthesia services will depend in part on measures of patient satisfaction. In addition to the potential for impact on provider payments, patient satisfaction surveys are playing an increasing role in competency assessment[9]. This study was carried to determine patients' perspective regarding spinal anesthesia, their level of satisfaction and the factors of dissatisfaction during caesarean deliveries. There was strong relation between patient dissatisfaction and awareness, moderate or severe post-operative pain, severe nausea and vomiting and lastly postoperative complications. It also noted that patient factors especially those with history of anesthesia especially undergone SA have greater comfort than general anesthesia[10]. Often, patients have been found to be more concerned with the interpersonal skills of hospital staff than with their technical skills and competence[11]. In addition, expressions of patients are usually biased to please staff and to avoid repercussions for negative care appraisal[12]. The patient factors of comfort, emotion physical independence, patient support, pain and hospital stay were shown to impact patient satisfaction[13]. Measuring factors that influence patient's satisfaction is vital to monitor the quality of care in anesthesia. The purpose of this study was to analysis the satisfaction of the mothers undergoing CS under SA. This study was carried out to determine satisfaction of the female patients undergoing CS before and after SA.

METHODOLOGY:

The study was conducted in DHQ Hospital Karak. It was convenience sampling technique, and the duration of this study was from December 01st -2019 to March 31st -2020. Total of 175 female patients were selected undergoing SA for CS. Those female patients with psychological disorders were excluded from the study. After getting ethical clearance and permission from Hospital Directors, the data was collected from these female patients regarding pre-operative and post-operative on a constructed questionnaire. Data was analyzed by using SPSS version 26. The comparison between elective and emergency procedure was done by applying

RESULTS:

chi-square test to evaluate the distribution of quantitative data. Level of statistical significance was set at p-0.004.

Table 1: Cross tabulation of Caesarean Section and satisfaction

Variables		Satisfaction		Total	Chi-square	P-value
		Yes	No			
Caesarean	Elective	46 (78.0%)	13 (22.0%)	59 (100%)	8.10	0.004
	Emergency	65 (56.0%)	51 (44.0%)	116 (100%)		
Total		111 (63.4%)	64 (36.6%)	175 (100%)		

Table 2: Cross Tabulation of Age with Post-operative back pain

Variables		Post-operative Back pain		Total	Chi-square	P-value
		Yes	No			
Age	20-24	28 (29.5%)	67 (70.5%)	95 (100%)	26.75	0.001
	25-29	04 (26.7%)	11 (73.3%)	15 (100%)		
	30-34	45 (69.2%)	20 (30.8%)	65 (100%)		
Total		77 (44.0%)	98 (56.0%)	175 (100%)		

Table 3: Demographics of Patients

		Frequency	Percentage
Occupation	Employed	74	18.3
	Housewife	101	81.7
Medical History	Yes	32	49.1
	No	143	50.9
Parity	Multigravida	89	66.7
	Primigravida	86	33.7
Type of Operation	Elective	57	38.3
	Emergency	116	61.7
Anesthesia History	Yes	67	30.9
	No	108	60.1
Cesarean History	Yes	79	45.0
	No	96	55.0

DISCUSSION:

The purpose of this study was to find out the maternal satisfaction of cesarean delivery of the female patients having spinal anesthesia both elective and emergency procedure. Patient satisfaction is significant component in these different procedure is to recognize complications that patients go through from SA, which helps to enhance the healthcare and anesthesia protocols. The patients receiving SA gave a high rate of patient satisfaction score[15]. For elective and emergency procedure of CS in 2010, United Kingdom[14] national estimates were 9.3% and 14.5% for elective and emergency CS, respectively. Elective and emergency CS rates in another study were 10.2% and 20.3%[15]. In our study 46% patients showed high satisfaction from SA in elective surgery. Whereas 65% patients showed satisfaction with emergency procedure. Studies showed satisfaction in 87% to 100% female patients with SA. In a recent study, low participant satisfaction with the explanation provided regarding SA. It can be explained in a study, emergency CS (76.8%) that is more, most probably the patient were in labour[16].

Satisfaction with pre-anaesthesia explanations was 73.7% among participants who underwent elective CS[17]. Similarly, a study was conducted in Pakistan; results indicated high level of (83%) patient's satisfaction[18]. In Korea, the 16% of the patients were not going to accept SA if they need it again[19]. In a study that showed high rate of patient satisfaction (96.3%)[18]. In our study, patient reported, (78.0%) elective CS and (56.0%) emergency CS satisfaction. Another study reported more complaints of post-operative backache in patients[16]. In our study, pain was associated with the age that it was increasing with age 20-24years (29.5%) to 30-34years (69.2%) with the chi-square of 26.75. Spinal anesthesia has been favored as the best choice for elective uncomplicated CS, safe and effective due to its avoidance of the airway, less risk of aspiration of gastric content, and easy to perform but have some complications.

In a recent study 68% patients reported being satisfied with their pain control[20]. It is reported, elective CS birth experience were successful with low pain complaints as compare to the emergency CS and it is associated with patients' satisfaction[21]. To reduce emergency CS it is important to improve patients' satisfaction with childbirth. Furthermore, presently in United states 2.1% of all deliveries are completely elective CS,[14] 11% is the current rate of CS. [22]. Our study raises an important question for obstetricians and the health care workers regarding the pregnant women, how to improve female's childbirth experience. A childbirth negative experience is associated with an increased risk of postpartum depression[20]. Therefore, improved maternal satisfaction led to improved clinical outcomes. A study showed that the elective CS may improve the maternal satisfaction[21]. Mothers are anxious regarding newborn and they prefer SA for their delivery, during emergency procedure. Proper management for pain relief should be priority for these patients during their CS. Analgesics that are used for the management of these patients should be the fundamental element for pain management for these females[23]. For long term contribution in satisfaction, it is important to have a pain management as a recommendation for the patients that might be depressed on seeing the gender of their newborn in our society, regardless of anesthesia mode of action. A study showed, 87% patients did not recommend SA for elective CS as they were not satisfied due the pain after the procedure and these patients marked insufficient pain management[24]. Similarly, in another study it was reported regarding SA for CS, 68% female patients were satisfied with the pain management after the procedure. [24]. To assess the satisfaction level of these patients the health care should be of high-quality and SA with management of pain should be determined [25].

CONCLUSION:

Our study concluded that spinal anesthetists provide More satisfaction to the female patients that are going through caesarean delivery. `it is concluded that there should be complete information regarding spinal anesthesia before surgery and the anesthetists should have good rapport with their patients. Awareness and practice change is important for the comfort of these patients to get less post-operative pain.

LIMITATIONS:

There should be multiple factors, which effect the patient satisfaction, but in this study those were not recorded. The sample size was small due to that we cannot generalize it to other population.

CONFLICT OF INTEREST: None

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REFERENCES:

1. Al-Husban N, Elmuhtaseb MS, Al-Husban H, Nabhan M, Abuhalaweh H, Alkhatib YM, et al. Anesthesia for cesarean section: retrospective comparative study. Int J Womens Health. 2021;13:141-15.
2. Cilginoglu H, Aliu A, Aliu D, Öztürk I. The Migrant Health and Medical Tourism Nexus in the Frame of a Research Profile of Bursa and Istanbul. In: Aliu A, Ozturk I, Aliu D, Cilginoglu H, editors. Conceiving Migration and Communication in a Global Perspective. UK: Cambridge

Scholars Publishing; 2020. 102-122 p.

3. Cai M, Loy SL, Tan KH, Godfrey KM, Gluckman PD, Chong YS, et al. Association of elective and emergency cesarean delivery with early childhood overweight at 12 months of age. JAMA Network Open. 2018;1(7):e185025.
4. Praveen S, Shivananda PT. A prospective study of maternal satisfaction with spinal anaesthesia for caesarean delivery in a tertiary care hospital. Int J Health Clin Res. 2020;3(10):74-8.
5. Saygı Aİ, Özdamar Ö, Gün İ, Emirkadı H, Müngen E, Akpak YK. Comparison of maternal and fetal outcomes among patients undergoing cesarean section under general and spinal anesthesia: a randomized clinical trial. Sao Paulo Med J. 2015;133(3):227-34.
6. Iddrisu M, Khan ZH. Anesthesia for cesarean delivery: general or regional anesthesia-a systematic review. Ain-Shams J Anesthesiol. 2021;13(1):1-7.
7. Nakahira J, Sawai T, Ishio J, Nakano S, Minami T. Factors associated with poor satisfaction with anesthesia in patients who had previous surgery: a retrospective study. Anesthesiol Pain Med. 2019;9(5).
8. Bashir T, Shahazad A, Khilji BA, Bashi R. Study of patients' satisfaction and hospital care in Pakistan: case study of Madina teaching hospital university Faisalabad. World Appl Sci J. 2011;12(8):1151-5.
9. Abedi GH, Rostami F. Regression model analysis of service desirability in a group of Mazandaran hospitals. Health Med. 2012;6(1):24-28.
10. Caljouw MAA, van-Beuzekom M, Boer F. Patient's satisfaction with perioperative care: development, validation, and application of a questionnaire. Br J Anesth. 2008;100:637-44.
11. Acquah RC. Patient Satisfaction with Anaesthesia Services during Elective Surgery at the Eastern Regional Hospital [dissertation on the Internet]. Ghana: University of Ghana; 2019.
12. Teoh WH, Shah MK, Mah CL. A randomized controlled trial on beneficial effects of early feeding post-caesarean delivery under regional anaesthesia. Singapore Med J. 2007;48(2):152-7.
13. Crow H, Gage H, Hampson S, Hart J, Kimber A, Storey L, et al. Measurement of satisfaction with health care: implications for practice from a systematic review of the literature. Health Technol Assess. 2002;6(32):1-250.
14. Bragg F, Cromwell DA, Edozien LC, Gurol-Urganci I, Mahmood TA, Templeton A, et al. Variation in rates of caesarean section among English NHS trusts after accounting for maternal and clinical risk: cross sectional study. BMJ. 2010;341:c5065.
15. Charuluxananan S, Sriprajittichai P, Sirichotvithyakorn P, Rodanant O, Kyokong O. Factors related to patient satisfaction regarding spinal anaesthesia. J Med Assoc Thai. 2003;86(2 Supp):S338-43.
16. Coşkun B, Pay RE, Coskun B, Şimsir C, Dur R, Colak E, et al. Comparison of emergency and elective cesarean sections in the breech presentation: a case-control study. Med J Bakirkoy. 2020;16(2):132-7.
17. Ghaffari S, Dehghanpisheh L, Tavakkoli F, Mahmoudi H. The effect of spinal versus general anesthesia on quality of life in women undergoing cesarean delivery on maternal request. Cureus. 2018;10(12).
18. Siddiqi R, Jafri SA. Maternal satisfaction after spinal anaesthesia for caesarean deliveries. J Coll Physicians Surg Pak. 2009;19(2):77-80.
19. Choi JG, In J, Shin HI. Analysis of factors related to patient refusal of spinal anesthesia. Korean J Anesthesiol. 2009;56(2):156-61.
20. Rhee WJ, Chung CJ, Lim YH, Lee KH, Lee SC. Factors in patient dissatisfaction and refusal regarding spinal anesthesia. Korean J Anesthesiol. 2010;59(4):260.
21. Páez-L JJ, Navarro-V JR. Regional versus general anesthesia for cesarean section delivery. Colomb J Anestesiol. 2012;40(3):203-6.
22. Blomquist JL, Quiroz LH, MacMillan D, Mccullough A, Handa VL. Mothers'

satisfaction with planned vaginal and planned cesarean birth. Am J Perinatol. 2011;28(5):383.

23. Kintu A, Abdulla S, Lubikire A, Nabukenya MT, Igaga E, Bulamba F, et al. Postoperative pain after cesarean section: assessment and management in a tertiary hospital in a low-income country. BMC Health Serv Res. 2019;19(1):1-6.

24. Burch T, Seipel SJ, Coyle N, Ortega KH, DeJesus O. Postoperative visual analog pain scores and overall anesthesia patient satisfaction. *Crit Care Nurs Clin North Am*. 2017;29(4):419-26.

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HEMATOLOGICAL CHANGES IN STORED CITRATE PHOSPHATE DEXTROSE ADENINE BAG BLOOD

Abdul Karim[1], Muhammad Waqas[2]

ABSTRACT:

OBJECTIVES:

This study aims to find the efficacy of stored whole blood for a period of 49 days and to delineate the changes that occur in Haemoglobin (HB), Red Blood Cell (RBC) and White Blood Cell (WBC) indices and Platelet count.

METHODOLOGY:

The study was carried out at District Headquarter (DHQ) Hospital, District Hangu in collaboration with the blood bank unit. 450 ml of blood was drawn from 10 healthy volunteer donors into an anticoagulant blood bag (CPDA-1) (63 mL). Blood bags were carefully stored in a quarantine shelf of the blood bank at 02-08°C. Samples were collected and tested for various haematological parameters (haemoglobin, RBC count, WBC count, haematocrit, mean corpuscular volume, mean corpuscular haemoglobin, mean corpuscular haemoglobin concentration, platelets count) at days 01 and 49 respectively on (ADVIA 360 haematology analyser).

RESULTS:

Statistically significant changes were observed in WBC count, Lymphocyte count and platelets count and gradual changes in mean corpuscular volume. While statistically non-significant changes were observed in other parameters (RBC, haemoglobin, haematocrit, mean corpuscular haemoglobin, mean corpuscular haemoglobin concentration).

CONCLUSION:

Haemolysis of the red cells that occurs during component processing and storage of red cell units has serious clinical implications for the blood recipient patients. Detecting excessive haemolysis important to minimize transfusion of bacterially contaminated blood units. Rapid degeneration of leukocytes could lead to immunomodulation related to blood transfusion. Whole blood should be leuko-depleted before storage if it must be used beyond one week.

KEYWORDS: *Red Blood Cells (RBC), White Blood Cells (WBC), Haemoglobin (Hb), Platelets, Transfusion*

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INTRODUCTION:

Safe Storage of blood is needed for a safe supply of blood products for transfusion medicines. Food and drug administration recommend and allow storing the blood up to 42 days[1]. Studies have shown that complication risks increase for blood products

stored longer than the then recommended duration. Progressive morphological and physiological changes have been noted during storage, which may lead to a reduction in the functional capacity of blood or blood products[1]. The oxygen caring capacity of red blood cell also decreases in storage, studies also suggest transfusion products raising from unrelated donor also had negatively affected some of the recipients[2]. The risk of blood transfusion complication and even death are reported many times in critically ill subjects. Reportedly duration of storage affects the biochemical and cellular values of blood due to storage conditions. These changes are referred to as storage lesions[3]. Haemolysis is the most common reason for storage lesion. This can affect the sample in several ways. After haemolysis erythrocyte's internal content is released into serum, this content includes haemoglobin, which directly affects the analyte concentration[3]. Over a long period of storage of RBC's at 04°C lead to loss of viability by RBC's either by the inability of the cells to survive in patient's circulation or by prolong contact with the plasma. This may lead to several biochemical changes in plasma[4,5]. Blood is collected in CPDA-1 bags for storage. These bags contain anti-coagulant (chelates ionised calcium), Dextrose (energy source of blood cells), Phosphate containing anticoagulant (lower acidity) and Adenine (ATP content increase viability of RBCs after transfusion)[6]. The purpose of our study was to find the efficacy of stored whole blood for a period of 49 days and to delineate the changes that occur in Haemoglobin (HB), Red Blood Cell (RBC) and White Blood Cell (WBC) indices and Platelet count.

METHODOLOGY:

This study was conducted at District Headquarter Hospital at District Hangu located of Khyber Pakhtunkhwa in Pakistan in collaboration with the blood bank from the head of the above-mentioned hospital and consent from the volunteer was also signed. 450 mL of blood were drawn from 10 healthy volunteer donors into (CPDA-1) anticoagulant blood bag (63 mL). Blood is collected with antecubital venepuncture, added to special blood bags containing 63 mL of CPDA-1 anticoagulant solution, and given adequate safety precautions to avoid contamination and infection. Blood donors were screened as per regulations of drugs and blood bank rules. All subjects were serologically examined for hepatitis B virus, hepatitis C virus and HIV before blood donation. Blood bags were carefully stored in a quarantine shelf in the blood bank at 02-08°C. The blood then kept for 49 days and samples were evaluated on days 01, 07, 14, 21, 28, 35, 42 and 49. Each sample was analysed for haematological parameters such as RBC count, WBC Count, HB, Mean corpuscle volume (MCV), Mean corpuscular Haemoglobin (MCH), Mean corpuscular Haemoglobin concentration (MCHC), Platelets (PLT), haematocrits (HCT), Neutrophil, Eosinophil, Monocytes and lymphocytes. All haematological parameters are studied using ADVIA 360 haematology analyser. All the was entered into the SPSS 23.0 and descriptive analysis was performed.

RESULTS:

Among the haematological parameters, there is a constant decline in WBC and platelets count from day 01 to day 49. HB, MCV, HCT, showed increasing values, RBC and MCH are almost constant while MCHC decreased. Neutrophils, Eosinophil, Monocytes decreased and Basophils remained constant while lymphocytes increased.

Table 1: Haematological Values from Day 1 to Day 49

Parameter	Day 01	7	14	21	28	35	42	49	Mean	St Deviation	p-value
WBC×10^9/L	6.03	5.3	4.73	4.01	3.66	3.49	2.95	2.66	4.10	1.09	<0.05
RBC×10^12/L	4.47	4.16	4.13	3.99	3.79	3.91	4.26	4.34	4.13	0.21	>0.05
HB g/dl	13.4	12.9	12.3	12.5	12.6	12.8	12.8	13	12.78	0.31	>0.05
Platelets×10^9/L	207	179	165	144	132	123	121	108	147.37	31.53	<0.05
Neutrophil %	59.6	51	44.3	41.56	26.23	25.53	23.83	23.02	36.88	13.21	<0.05
Lymphocyte%	28.36	40.53	42.96	48.16	52.8	56.03	66.33	66.33	50.18	12.18	<0.05
Monocytes %	06	05	05	0 4	03	03	03	02	03.87	1.26	>0.05
Eosinophil %	04	04	0 3	03	02	02	01	02	02.62	0.99	>0.05
MCH (FL)	32	31.6	30.9	30.4	29.6	29.2	28.7	27.4	29.97	1.44	<0.05
MCV (pg.)	92.6	95	97.7	101.2	102.8	103.9	104.1	105.9	100.4	4.47	>0.05
MCHC (g/L)	34.6	33.7	33.2	32.6	31.5	30.2	29.4	28.2	31.67	2.10	<0.05

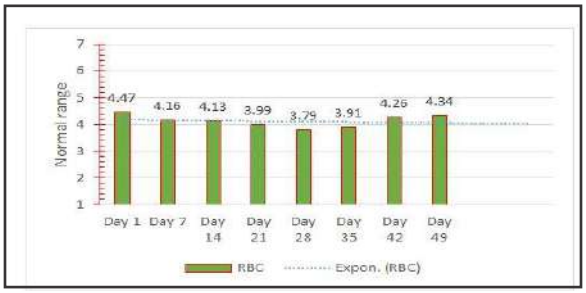

Figure 1: Variation in RBC Value from Day 1 to Day 49

Figure 2: Variation in HB Value from Day 1 to Day 49

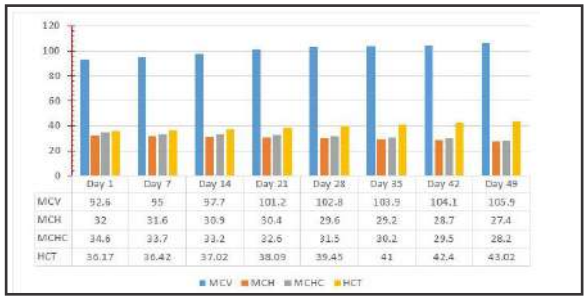

Figure 3: Variation in MCV, MCH and MCHC Value from Day 1 to Day 49

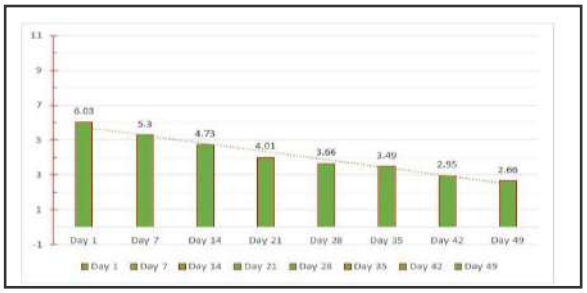

Figure 4: Variation in WBC Value from Day 1 to Day 49

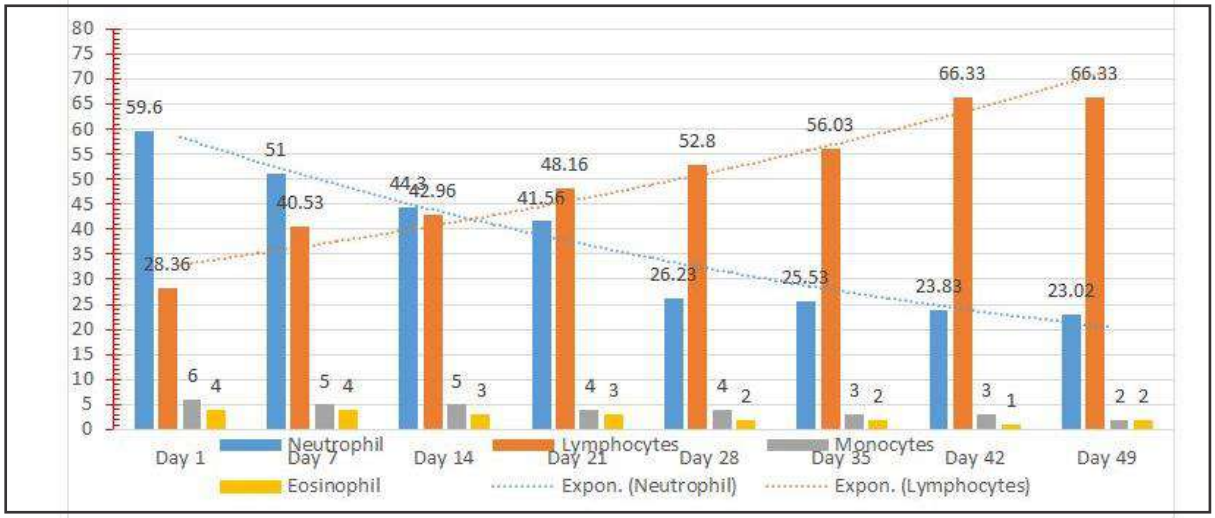

Figure 5: Variation in Differential Leukocytes Value from Day 1 to Day 49

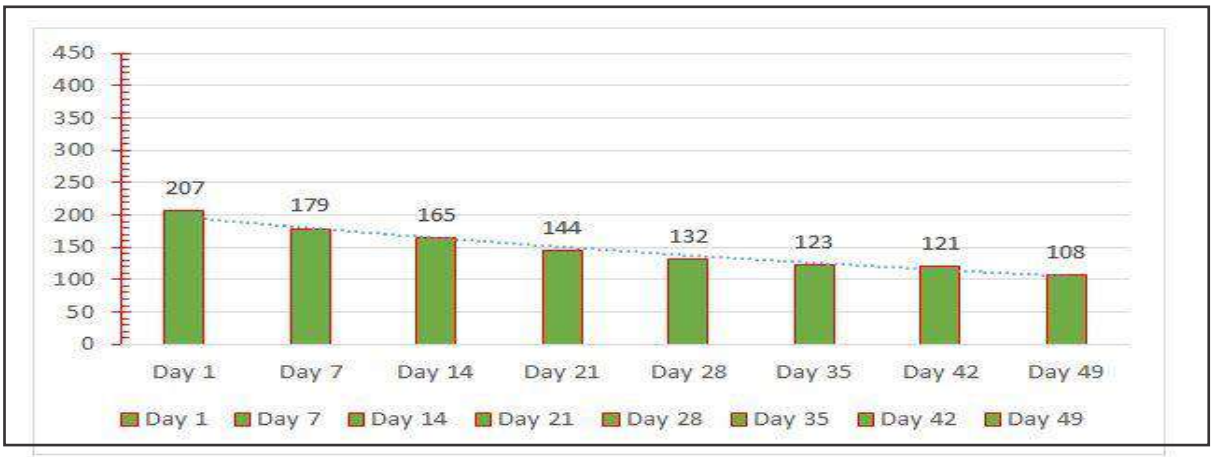

Figure 6: Variation in Platelets Value from Day 1 to Day 49

DISCUSSION:

In a study, 450 ml of whole blood were drawn in a CPDA-1 blood bag from 10 healthy volunteers. In our study, no statistical changes in RBC count were observed which were (4.47 million) on day 01 and (3.79 million) on day 28, which were comparable observation with other studies (4.50 million) on day 28[7]. In our study RBC count changes were insignificant. However, our study continued up to 49 days the mean value of RBC on the last day is (4.34 million) there no significant fall or rise in RBC value. In the current study in haemoglobin concentration, there was no statistically significant fall or rise observed for 28 days storage period, which was (12.6 g/dl) at 28 day, which was near to value (12.9 g/dl) found in another study[7,12]. However, we examine the HB value up to 49 days, which was (13.06 g/dl). During our study, a significant fall occurs in HB value from day 01 to day 14 during storage which was also observed by Adias et al[8]. During storage, the decreased value of HB can be attributed to haemolysis. However, in our study, no significant changes were observed during storage. Exposure of blood bag to high temperature, leakage of haemoglobin, improper mixing of blood can be the contributing factors. Statistically non-significant changes were observed in

Haematocrits in our study during the 49-day storage which was (43.02 %) while during the study the value of HCT up to 28 days were (39.45 %) similar to the observed by other researchers (p = 0.312)[14,15]. In our study, a minimum variation in HCT value occurs from day 01 to day 49 during storage which is due to an increase in MCV. Which are also noted by Bourgès-Abella et al and current studies[9,16]. Statistically, our study showed a gradual increase in MCV value, which was 105.9 FL on 49 days during storage. The value of MCV on 28 days (102.8 FL) which were also found by Chhabra et al[7]. During storage, the rise in the value of MCV was due to the swelling of RBCs. In our study, there were no significant changes occurred in MCH i.e. (27.4 pg.) at 49 days. While the value of MCH at 28 days (29.6 pg.) which were like Adias et al there were no significant changes were absorbed during 28-day storage[8]. In our study, the mean value of MCHC was (34.6 g/dl) on day 01 and fall to (28.2 g/dl) on day 49. The mean value of MCHC on day 28 (31.5 g/dl) which were similar to (29.5 g/dl) found by Chhabra et al[7]. Due to a gradual rise in haematocrit and during storage MCHC value decrease in HB. WBC count was significantly reduced from day 01 to day 28. The WBC count on day 01 was (6.03 × 10^/L) and fall to (3.66 × 10^/L) on day 28. While there is a significant change in WBC count on day 49, (2.66× 10^/L). Similar results were found (2.77 × 10^/L) by Bhargava et al[10]. The mechanism due to which WBC value decreased during storage was the loss of cell viability due to ATP depletion by the formation of micro aggregates leukocytes also consumed here. In our study Neutrophil on day 01 are (59.6 × 10^/L) which significant fall to (23.02× 10^/L) at day 49. The number of Neutrophil on day 28 (26.23 × 10^/L) was similar depletion (38.8 × 10^/L) found by Bhargava et al[10]. In our study Neutrophil, Monocyte, and Basophil are slightly decreased while Lymphocytes were increased the number of Lymphocytes on day 01 are (28.3 × 10^/L) and increase to (63.3) on day 49. While the value of lymphocytes on day 28 increasing[17,18] and Ming Xue[19] and Bhargava et al also found it (85.06 × 10^/L)[10]. In our study, there was a significant fall in platelets count. On day 1 the platelets count was (207 × 10^/L), a significant decrease to (132 × 10^/L) at day 28, also found by Chhabra et al (1.64 × 10^/L) on day 28[7]. During storage, the platelets were affected by a hydrolytic enzyme released by leucocytes, which lead to the effect of the platelet's membrane and cause destruction. This was a similar observation made by Nuaimy to decrease the count of platelets from the second day onward of storage[11]. The count of platelets on day 49 in our study (108 × 10^/L).

CONCLUSION:

Donor blood is always in short supply and inadequate to meet clinical requirements. Whole blood is commonly transfused in developing countries due to lack of facility for component separation, hence there is a need to study the efficacy of stored blood. Considering the non-significant changes in RBC indices (HB, RBC count, HCT, MCH, MCHC) on long storage. However, haemolysis of the red cells that occurs during component processing and storage of red cell units has serious clinical implications for the blood recipient patients. Detecting excessive haemolysis important to minimize transfusion of bacterially contaminated blood units. Rapid degeneration of leukocytes could lead to immunomodulation related to blood transfusion. Whole blood should be leuko-depleted before storage if it must be used beyond one week. Significant changes in platelets count in stored blood component therapy/platelets-pheresis might be a better option.

REFERENCES:

1. Koch CG, Li L, Sessler DI, Figueroa P, Hoeltge GA, Mihaljevic T, et al. Duration of red-cell storage and

complications after cardiac surgery. New England J Med. 2008;358(12):1229-39.

2. Bonaventura J. Clinical implications of the loss of vasoactive nitric oxide during red blood cell storage. Proceedings of the National Academy of Sciences of the United States of America. 2007;104(49):19165-6.
3. Tayal D, Gupta M, Goswami B. Does prolonged storage of serum samples alter the lab results? Indian J Med Biochem. 2017;21(1):30-3.
4. AuBuchon JP, Birkmeyer JD, Busch MP. Safety of the blood supply in the United States: opportunities and controversies. Ann Intern Med. 1997;127(10):904-9.
5. Shields CE. Effect of adenine on stored erythrocytes evaluated by autologous and homologous transfusions. Transfusion. 1969;9(3):115-9.
6. Cheesbrough M. District Laboratory Practice in Tropical Countries. 2nd ed. Great Britain: Cambridge University Press; 2005.
7. Chhabra S, Chaudhary S, Sehgal PK, Singh S, Gupta M, Sen R. Changes in RBC and platelet indices in CPDA stored blood. Int J Healthcare Biomed Res. 2017;5(4):69-75.
8. Adias TC, Moore-Igwe B, Jeremiah ZA. Storage related haematological and biochemical changes of CPDA-1 whole blood in a resource limited setting. J Blood Disorders Transf. 2012;3(3):1-4.
9. Bourgès-Abella NH, Geffré A, Deshuillers PL, Braun JP, Trumel C. Changes in hematology measurements in healthy and diseased dog blood stored at room temperature for 24 and 48 hours using the XT-2000iV analyzer. Vet Clin Pathol. 2014;43(1):24-35.
10. Bhargava P, Gupta R, Khare V. CPDA-1 stored blood induced effect on hematological and biochemical parameter up to 28 days. Rec Adv Path Lab Med. 2016;2(3&4):8-12.
11. Nuaimy K. Haematological changes in stored blood. J Educ Sci. 2008;21:49-56.
12. Marabi MP. Evaluation of Cellular Changes, Biochemical Changes and Bacterial Contamination in Blood Stored for Transfusion at Bungoma County Referral Hospital [doctoral dissertation on the Internet]. Kenya: Kisii University; 2021.
13. Hudson KE, Fasano RM, Karafin MS, Hendrickson JE, Francis RO. Mechanisms of alloimmunization in sickle cell disease. Curr Opin Hematol. 2019;26(6):434-41.
14. Aninagyei E, Adu P, Rufai T, Ampomah P, Kwakye-Nuako G, Egyir-Yawson A, et al. Effect of asymptomatic plasmodium falciparum parasitaemia on platelets thrombogenicity in blood donors. Indian J Hematol Blood Transfus. 2021:1-8.
15. Batina-Agasa S, Kambale-Kombi P, Kabamba P, Tonen-Wolyec S, Tshilumba CK, Djang'eing'a RM, et al. Sickle cell trait among blood donors in the democratic republic of the Congo: which transfusion policy for sickle cell patients?. ISBT Sc Ser. 2021;16(1):56-9.
16. Aninagyei E, Adu P, Egyir-Yawson A, Acheampong DO. Elevated IL-12, TNF-α, and TNF-α/IL-10 ratios in stored plasmodium falciparum-infected whole blood: implications for safe haemotransfusion. J Immunol Res. 2020;2020.
17. Liu S, Li Y, She F, Zhao X, Yao Y. Predictive value of immune cell counts and neutrophil-to-lymphocyte ratio for 28-day mortality in patients with sepsis caused by intra-abdominal infection. Burns Trauma. 2021;9:tkaa040.

18. Razazi K, Boissier F, Surenaud M, Bedet A, Seemann A, Carteaux G, et al. A multiplex analysis of sepsis mediators during human septic shock: a preliminary study on myocardial depression and organ failures. Ann Intensive Care. 2019;9(1):1-9.

19. Xue M, Zhang S, Xie J, Zhang X, Liu F, Huang Y, et al. Differential expression of genes associated with T lymphocytes function in septic patients with hypoxemia challenge. Ann Transl Med. 2019;7(24).

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CHANGES IN HEMODYNAMIC READING IN SPINAL ANESTHESIA FOR CESAREAN SECTION

Shakir Ullah Khan[1]

ABSTRACT:

OBJECTIVE:

To compare the pre and post induction blood pressure and heart rate readings in spinal anesthesia during Cesarean section.

METHODOLOGY:

This was a cross sectional study conducted in Capital Development Authority Hospital, Islamabad. 100 patients were included in this study. Data was collected through structured Performa. Convenient sampling method was used for the selection of participants. Informed consent was taken from the patients and the concerns doctors to collect the data. The ethical approval was taken from the ethical committee of the Capital Development Authority Hospital, Islamabad.

RESULTS:

Total was 100 cases selected in which the patients had surgery history, 32 patients had no surgery history. There was difference in the blood pressure and heart rate readings of the pre and post induction of the spinal anesthesia during cesarean of the patients.

CONCLUSION:

It was concluded that spinal Spinal anesthesia is commonly used for elective cesarean delivery.

KEYWORDS: *Spinal Anesthesia, Hemodynamic, Blood pressure,Heart rate, Cesarean-Section*

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INTRODUCTION:

Female Patients that present for surgery during pregnancy pose several important challenges for anesthesiologists. Thanesthetic technique for C-section has changed since last 30 years from general anesthesia to regional anesthesia1. Spinal anesthesia has become the main technique both for elective and urgent C- section. There are several techniques for administering regional anesthesia; spinal, epidural, combine spinal epidural and continuous spinal anesthesia[2]. Although spinal block provides excellent anesthesia for cesarean section it is frequently accompanied by hypotension generally proportional to the degree (level) of sympathectomy (height of block)[3]. Many methods to decrease the risk of hypotension have been studied, which include ensuring proper maternal position with uterus displaced off vena cava, infusion of fluids to increase effective blood volume, administration of ephedrine and phenylephrine, physical intervention such as leg wrapping[4]. In elective cesarean delivery, spinal

anesthesia is frequently used[5]. An intensification in venous capacitance and a decrease in systemic vascular resistance results in hypotension. Because uterine blood flow is dependent on perfusion pressure, hypotension results in reduced uterine blood flow, with a potential compromise in fetal oxygenation[7]. In Spinal anesthesia the risk of toxicity is reduced as minimum dose of local anesthesia are used and the block is faster and reliable as compared to epidural anesthesia[8]. Hemodynamic changes have been related with adjustments in Doppler waveform indices in the umbilical artery and a reduction in umbilical arterial pH at delivery. This is due to reduce arterial pressure and cardiac output with a single subarachnoid injection[9]. Several studies have investigated the hemodynamic effects of spinal anesthesia in severely affected patients. The hemodynamic fluctuations linked with spinal anesthesia signify the utmost latent risk of this method for mother and fetus[10]. Contraindications to regional anesthesia are patient refusal or patient not being able to cooperate, increase intracranial pressure, coagulopathy, and local skin infection. The occurrence of post Dural puncture headache (PDPH) after spinal anesthesia using small (25 G, 27 G) pencil point needles is low unintentional dura puncture with an epidural needle (18 G) has an incidence of 52% of PDPH[11]. Long lasting neurologist deficit is extremely rare, estimated to 1:240 000. The incidence of spinal hematoma after obstetric epidural blockade has been estimated to be 1:168 000[12].

METHODOLOGY:

The study design was cross sectional observational study. This study was performed among the patient of the Capital Development Authority, Islamabad. The study time duration was October 2018 and April 2019. A total of 100 females visited hospital gynaecology and Obstetrics department were selected for the study. All those patients that were undergo cesarean section in elective surgeries for spinal anesthesia were included. All emergency gynaecology cases were excluded. The approval was taken from hospital ethical committee, in Capital Development Authority Hospital, Islamabad. Informed written consent was taken from each patient. Initial data about age and date of admission was recorded on predesigned Performa. Detailed history and examination were done by senior surgeon or anesthesiologist under supervision. Data was entered and analyzed in SPSS 23.0.

RESULTS:

A total of 100 cases were taken for this study with a mean age of 30+4.942 years. It was found that 68(68.0) patients had previous history of surgery, while 32(32.0) had no previous history of surgery. The mean Hemoglobin Concentration was found to be 11.21+1.311. Table 1 shows the blood pressure and heart rate before induction.

Table 1: Mean and standard deviation of the patients

	Pre induction n= 100	Post induction	After 10 min induction n= 100	After20 minutes
Scales	Mean+SD	Mean+ SD	Mean+ SD	Mean+ SD
Systolic BP	128.86+11.793	123.500+19.035	113.500+12.716	106.520+ 13.37
Diastolic BP	77.300+11.152	73.640+18.828	67.900+15.52	57.700+ 14.8
Heart rate	99.440+12.756	101.820+16.126	96.480+12.726	97.900+10.35

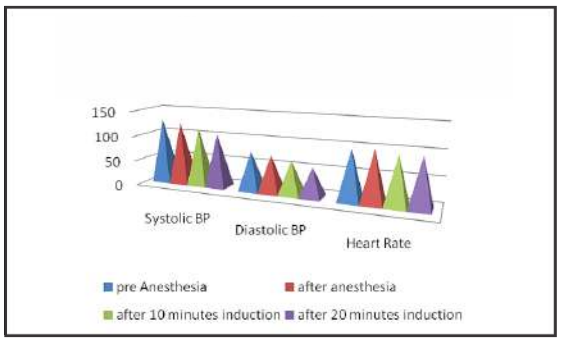

Figure: 1: Mean Difference of Blood Pressure and Heart Rate

DISCUSSION:

Spinal anesthesia used in elective cesarean delivery are associated with hypotension which is caused by an increase in venous capacitance and a reduction in systemic vascular resistance[13]. In one study it was concluded that after spinal anesthesia, Mean Arterial Pressure (MAP) decreased significantly and was maintained at a lower level than the baseline value until fetal delivery. Like MAP, Cardiac Output decreased significantly at 5 min after spinal anesthesia until delivery[14]. Although Total Peripheral Resistance (TPR) also decreased after spinal anesthesia, it was not significant. Similarly, another study showed that total vascular resistance was maintained in patients with single fetus in post spinal period[15]. Liu and co-workers reported no significant reduction of systemic vascular resistance (SVR) except at 5 min after spinal anesthesia[16]. Since they used phenylephrine to treat hypotension after spinal anesthesia. In our study, there was significant difference between the pre and post results of blood pressure and heart rate of the cesarean patients having spinal anesthesia during the elective surgery. As recently conducted a study about the physiological changes after Spinal Anesthesia in 2008, it was stated that CO typically decreases due to a decrease in venous return[17]. Hypotension after spinal anesthesia for C- section is common and is a risk factor for adverse maternal and fetal events. After identifying the association of hypotension with spinal anesthesia and its prevalence, the clinician with better serve the patients with precautionary measures. The prognostic capability non-invasive hemodynamic parameters for hypotension has been investigated in parturient with single fetus undergoing C-section[20]. Yukos and co-workers demonstrated that preanesthetic HR may be a prognostic factor for hypotension associated with spinal anesthesia[19]. In this study, we found a tendency to a lower baseline Cardiac Output for parturient with twins who developed hypotension.

CONCLUSION:

Spinal anesthesia is commonly used for elective cesarean delivery. Associated hypotension is caused by an increase in venous capacitance and a reduction in systemic vascular resistance. According to the result of our study it was concluded that SA effects the hemodynamic stability of the patients. Patients develop hypotension and bradycardia after the induction of SA. It was clearly identified according to the results of our study that there is difference in pre-induction HR and BP and post-induction HR and BP.

REFERENCES:

1. Bowyer L. The confidential enquiry into maternal and child health (CEMACH). Saving mothers' lives: reviewing maternal deaths to make motherhood safer 2003-2005. The seventh report of the confidential enquiries into maternal deaths in the United Kingdom. Obstet Med. 2008;1(1):54.
2. Levy DM. Emergency cesarean section: best practice. Anesthesia. 2006;61(8):786-91.
3. Campbell DC, Tran T. Conversion of epidural labour analgesia to epidural anesthesia for intrapartum cesarean delivery. Can J Anesth. 2009;56(1):19-26.
4. Rawal N, Holmstrom B. The combined spinal-epidural technique. Best Pract Res Clin Anesthesiol. 2003;17(3):347-64.

5. Bevacqua BK. Continous spinal anesthesia: what's new and what's not. Best Pract Res Clin Anesthesiol. 2003;17(3):393-406.
6. Dresner M, Pinder A. Anesthesia for cesarean section in women with complex cardiac disease: 34 cases using the Braun Spinocath spinal catheter. Int J Obstet Anesth. 2009;18(2):131-6.
7. Choi PT, Galinski SE, Takeuchi L, Lucas S, Tamayo C, Jadad AR. PDPH is a common complication of neuraxial blockade in parturients: a meta-analysis of obstetrical studies. Can J Anesth. 2003;50(5):460-9.
8. Pallasmaa N, Ekblad U, Gissler M. Severe maternal morbidity and the mode of delivery. Acta Obstet Gynecol Scand. 2008;87(6):662-8.
9. Kodali BS, Chandrasekhar S, Bulich LN, Topulos GP, Datta S. Airway changes during labor and delivery. Anesthesiologist. 2008;108(3):357-62.
10. Reynolds F, Sharma SK, Seed PT. Analgesia in labour and fetal acid-base balance: a meta-analysis comparing epidural with systemic opioid analgesia. Int J Obstet Gynaecol. 2002;109(12):1344-53.
11. Palmer SK. Anaesthesia care for obstetric patients in the United States. In: Reynolds F, ed. Regional Analgesia in Obstetrics – a Millennium Update. London: Springer; 2000.
12. Casey BM, McIntire DD, Leveno KJ. The continuing value of the Apgar score for the assessment of newborn infants. N Engl J Med. 2001;344(7):467-71.
13. Xu Z, Shen F, Zhang Y, Tao Y, Chen X, Liu Z. Combined spinal-epidural anesthesia with hypobaric ropivacaine in sitting position significantly increases the incidence of hypotension in parturients undergoing cesarean section. J Obstet Gynaecol Res. 2017;43(4):669-75.
14. Ram M, Lavie A, Lev S, Blecher Y, Amikam U, Shulman Y, et al. Cardiac hemodynamics before, during and after elective cesarean section under spinal anesthesia in low-risk women. J Perinatol. 2017;37(7):793-9.
15. Kee WD, Khaw KS, Ng FF, Lee BB. Prophylactic phenylephrine infusion for preventing hypotension during spinal anesthesia for cesarean delivery. Anesth Analg. 2004;98(3):815-21.
16. Dyer RA, Reed AR, van-Dyk D, Arcache MJ, Hodges O, Lombard CJ, et al. Hemodynamic effects of ephedrine, phenylephrine, and the coadministration of phenylephrine with oxytocin during spinal anesthesia for elective cesarean delivery. J Am Soc Anesthesiol. 2009;111(4):753-65.
17. Dyer RA, James MF. Maternal hemodynamic monitoring in obstetric anesthesia. J Am Soc Anesthesiol. 2008;109(5):765-7.
18. Sharwood-Smith G, Drummond GB. Hypotension in obstetric spinal anaesthesia: a lesson from preeclampsia. Br J Anaesth. 2009;102(3):291-4.
19. Yokose M, Mihara T, Sugawara Y, Goto T. The predictive ability of non-invasive haemodynamic parameters for hypotension during caesarean section: a prospective observational study. Anaesthesia. 2015;70(5):555-62.
20. Kuwata S, Suehiro K, Juri T, Tsujimoto S, Mukai A, Tanaka K, et al. Pleth variability index can predict spinal anaesthesia-induced hypotension in patients undergoing caesarean delivery. Acta Anaesthesiol Scand. 2018;62(1):75-84.

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INSTRUCTIONS TO AUTHORS

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Abstract of an original article should be in structured format with the following subheadings:

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The introduction of the article is funnel shaped, moving from the general information followed by specific information related to the research. It should include the purpose of the article after giving brief literature review strictly related to objective of the study. The rationale for the study or observation should be summarized. Only strictly pertinent references should be cited and the subject should not be extensively reviewed. Data, methodology or conclusion from the work being reported should not be presented in this section. It should end with a statement of the study objective.

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