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Surgeries and Cardiovascular System

Yoruba Young Female Adults

Benign Prostatic Hyperplasia

Highlights

Omdurman Teaching Hospital

Differences in Cardiorespiratory

Discovering Thoughts, Inventing Future

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SURGERIES AND CARDIOVASCULAR SYSTEM



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CONTENTS OF THE ISSUE

- i. Copyright Notice
 - ii. Editorial Board Members
 - iii. Chief Author and Dean
 - iv. Contents of the Issue
-
1. Association between Socioeconomic Variables (SEV) and Benign Prostatic Hyperplasia (BPH) among Sudanese Patients. *1-4*
 2. Pattern and Management Outcome of Chest Injuries in Omdurman Teaching Hospital Sudan. *5-9*
 3. Outcome of Coronary Artery Bypass Graft Surgery in Elshaab and Ahmed Gasimhospitals (2012-2015). *11-16*
 4. Importance of Primary Prevention for Arterial Hypertension and Cardiovascular Risks. *17-20*
 5. Is Platelet Decline a Predictor of Poor Outcome in Severely Burnt Patients? A 5 Year Retrospective Study. *21-29*
-
- v. Fellows and Auxiliary Memberships
 - vi. Process of Submission of Research Paper
 - vii. Preferred Author Guidelines
 - viii. Index



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Association between Socioeconomic Variables (SEV) and Benign Prostatic Hyperplasia (BPH) among Sudanese Patients

By Moneer Ahmed A/gadir Elmagbool, Khalid Eltahir Khalid
& Mohammed El Imam Mohammed

Gezira University, Sudan

Abstract- Objective: To assess several socioeconomic variables and their association with benign prostatic hyperplasia (BPH).

Patients and methods: A hospital based prospective study comprised 209 patients (aged 36-90 years, mean age for 9.5 years) surgically treated for BPH within one year of its diagnosis (cases). All cases were from rural area. We classified men with clinical BPH at the follow-up if they reported (1) frequent or difficulty urinating and were told by a health professional that they had an enlarged or swollen prostate or (2) if they reported having surgery for BPH. Each participant completed a standardized questionnaire, including socioeconomic status, use of cigarettes, alcohol and coffee consumption. The questionnaire also elicited detailed information on the medical history of prostatic and (over the past month) lowers urinary tract symptoms, applying all questions from the American Urology Association instrument.

Keywords: *benign prostatic hyperplasia, epidemiology, risk factors, sexual activity, Gezira.*

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Results: The prevalence of surgery for BPH increased with age from 45.3% at ≤ 65 years to 54.7% at ≤ 90 years. There was an inverse association between alcohol intake and men treated surgically for BPH or in 'watchful waiting' for surgical intervention, but a positive correlation with coffee consumption, and although not significantly, with the number of cigarettes smoked and snuff.

There is also strong association between coffee consumption and IPSS among study subjects ($P > 0.05$). Although, IPSS was moderate for most of the study subjects, men who had spent most of their lives in a rural rather than an urban environment appeared to be at increased risk.

Conclusion: Given the opposite effect of Coffee in increased risk of clinical BPH, generally, the lifestyle factors assessed here have no major effect on the aetiology of BPH.

Keywords: benign prostatic hyperplasia, epidemiology, risk factors, sexual activity, Gezira.

I. INTRODUCTION

Benign prostatic hyperplasia (BPH) is one of the more common conditions among aging men, making BPH a leading source of healthcare

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expenditure in the United States (1-2). Unfortunately, the pathophysiology of PBH and the progression to lower urinary tract symptoms (LUTS) remain poorly understood (3). The diagnosis of BPH relies almost entirely on patient reporting and complaints of incomplete emptying, urgency, discomfort, or hesitancy. As such, the diagnosis of BPH has highly subjective component compared to other common age-related chronic conditions, hence more susceptible to various forms or reporting bias possibly rooted in sociocultural differences in symptom perception or the willingness of patients to report and discuss urinary symptoms (4). BPH in association with some lifestyle factors; sexual activity seems to have no effect, but studies of behavioural factors on PBH have produced conflicting results for the effect of cigarette smoking, alcohol consumption and coffee intake (5). Since, the importance of these factors remains to be elucidated; the present study was conducted to evaluate several lifestyle factors and their association with BPH.

II. MATERIALS AND METHODS

From March 2010 to March 2012, 209 with BPH who: (i) were surgically treated for this disease within two years of its diagnosis ('incident' cases); (ii) had histological evidence of coexisting prostate cancer; and (iii) were residents of Gezira area, were identified in Gezira Hospital for Renal Diseases and Surgery (GHRDS). Cases were interviewed in the hospital wards, before discharge by either one or two trained interviewers, which based on structural questionnaire.

The total BPH 'prostate symptom score' (PSS) was obtained from the seven questions (score 0-5) giving a possible range of 0-35; the questions are; sensation of incomplete bladder emptying, having to urinate again after less than 2 h, stopping and starting several times during urination, difficulty in postponing urination, weak urinary stream, having to push or strain to begin urination, and nocturnal frequency of getting up to urinate. We classified men with clinical BPH at follow-up if they reported (1) frequent or difficulty urinating and were told by a health professional that they had an enlarged or swollen prostate or (2) if they reported having surgery for BPH. The data was assessed using the logistic regression analysis of the SPSS.

Socioeconomic status was introduced as ordered variables. In all analyses statistical significance was indicated by a two-tailed $P < 0.05$.

III. RESULTS

Two hundred and nine patients (aged 36-90 years, mean age for 9.5 years), according to age category 45.3% at ≤ 65 years to 54.7% at ≤ 90 years. The frequency of PBH increased over age of 60 years reaching the top at age between 56-75 years indicating that the prevalence of severe clinical BPH also increased significantly with age (Table 1). Table 1 also shows the basic demographic characteristics among study subjects, more than half the study cases (54.5%) are lived in the rural area and are descending from Arab

origin. Almost all of the study subjects are married and the majority were practice sex in the age between 20 to 30 years. Table 2 shows the frequency distribution of cases for selected personal characteristics and habits. The data reported an inverse association between alcohol intake and men treated surgically for BPH or in 'watchful waiting' for surgical intervention, but a positive correlation with coffee consumption, indicating that the risk of BPH increased significantly as more coffee was consumed, however no supports for the hypothesis that consumption of alcohol increased the risk for BPH. There is also strong association between coffee consumption and IPSS among study subjects ($P > 0.05$), although, IPSS was moderate for most of the study subjects (Table 2).

Table 1: Distribution (characteristics and distribution) of 209 patients with BPH at baseline

Characteristics	Frequency	Percentage
Age (years)		
36-45	3	3.3
46-55	20	9.5
56-65	68	32.5
66-75	87	41.8
76-85	15	11.9
86+	2	1.0
Education		
• None	27	17.6
• less than bachelors degree	113	73.9
• Bachelors and advanced degree	13	8.5
Marital status		
• Not married	3	1.4
• Married:	206	98.6
• Unigamy	130	63.1
• Polygamy	76	36.9
First sexual practice (years)		
<20	53	25.4
20-30	134	64.1
30	22	10.5
Residence		
• Rural	114	54.5
• Urban	94	45.0
• Displaced	1	0.5
Cigarette smoking		
• Never smoke	142	67.9
• Current smoke	67	32.1
Alcohol intake		
• Yes	56	26.8
• No	153	73.2
Coffee consumption		
• Never or rare	65	31.1
• 1-4 cups per day	130	62.2
• >5 cups per day	14	6.7
Snuff intake		
• Yes	81	38.8
• No	128	61.2

Table 2 : Frequencies and prevalence of some beverages, smoking, snuff and spouse by IPSS score among BPH patients

Characteristics		IPSS			Sig.
		0-7	8-19	20-35	
IPSS	Frequency	19	98	92	
	Percent	9.1	46.9	44.0	
Alcohol	Yes	4	33	30	.650
	No	15	65	62	
Smoking	Yes	4	33	30	.552
	No	15	65	62	
Coffee	Yes	8	67	69	0.01*
	No	11	31	23	
Snuff	Yes	9	36	36	.681
	No	10	62	56	
Spouses	Unigamy	10	62	58	.665
	Polygamy	9	36	31	

* $p < 0.01$

IV. DISCUSSION

As is widely accepted practice, this epidemiological study was based on Sudanese men with BPH who had surgery or were candidates for surgical intervention. Surgery is considered more effective than 'watchful waiting' with or without lifelong medical therapy. Some men who consider their symptoms annoying may desire treatment, whereas others choose watchful waiting. Unlike prostate size, which has no correlation with the degree of BPH, the score obtained from the PSS is a reliable indicator of symptoms. Using the IPSS the physician can determine whether the patient's prostatism is mild, moderate or severe, and to what extent it improves during or after any treatment. The subjective IPSS and the objective urodynamic evaluation do not always agree, and then only approximately. The progression of pathological (histologically identifiable) BPH to clinical BPH is important, necessitating therapeutic intervention. Urologists differ considerably in their choice of indications for and the timing of prostatectomy; thus the rate of prostatectomy varies with professional education and among different areas or countries. The risk of a 50-year-old man undergoing a prostatectomy in his lifetime may be up to 40%; by 80 years 85% of men has histologically identifiable BPH. BPH does not occur in men who were castrated before puberty and is rare in men who were castrated before 40 years old (6). Oestrogens and androgens act synergistically, but the excess risk associated with oestrogen level is confined to men with relatively low androgen levels (7). The intake of alcohol and caffeine based beverages, cigarette smoking, obesity and other factors affecting the endogenous sex hormones might be related to the risk of developing BPH. In the present age-stratified cohort study of men aged 36–90 years, neither the snuff nor cigarette smoking was essential risk factors for BPH, but coffee consumption apparently influenced the

development of clinical BPH; the relative risk decreased with alcohol and increased with coffee consumption.

The intake of high levels of alcohol reduces plasma testosterone concentration, with decreased production and increased metabolism (8); thus the alcohol intake influences the androgen balance. Several epidemiological studies report an inverse relationship of alcohol with BPH. In the present study men lived in the rural rather than an urban environment appeared to be at increased risk of BPH. This data was in contrast to other study indicated that men lived who spend most of their lives in an urban environment before setting to rural area are at greater risk for BPH (9). Further epidemiological studies should evaluate whether filtered coffee consumption or avoiding coffee reduces the risk of BPH or progression to surgery. Whether the constituents of coffee produce their effect on BPH through hormonal changes, abnormal lipid metabolism or other mechanisms remain to be determined. In summary, the study examined the cause-and-effect relationships between socioeconomic factors and clinical BPH. Despite the effect of coffee consumption to BPH, the understanding the factors with prospective effects or increasing the risk of developing BPH remains limited as long as the cause are uncertain.

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Pattern and Management Outcome of Chest Injuries in Omdurman Teaching Hospital Sudan

By Abdelrazag Y Saeed, Aamir A Hamza & Omer M Ismail

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Abstract- Background : Thoracic trauma is one of the leading causes of morbidity and mortality in developing countries. The incidence of thoracic trauma has rapidly increased in this century of high speed vehicles, violence and various other disasters. A considerable number of preventable deaths occur due to inadequate or delayed treatment of otherwise an easily remediable injury.

Objectives: to study Pattern and management outcome of chest injuries in Omdurman Teaching Hospital.

Patients and methods: This study is Observational prospective analytical hospital based study, conducted in Omdurman Teaching Hospital of one year duration from May 2013 to April 2014 in which patients with significant thoracic trauma were managed, questionnaires were used and variables were Age, gender, mechanism of injury, clinical diagnosis, associated injuries, complications, treatment, length of hospital stay.

Keywords: chest injuries, pneumothorax, thoracostomy, management, pattern, chest tube.

GJMR-I Classification: NLMC Code: WI 100



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Pattern and Management Outcome of Chest Injuries in Omdurman Teaching Hospital Sudan

Abdelrazag Y Saeed ^α, Aamir A Hamza ^σ & Omer M Ismail ^ρ

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Results : 150 with various forms of chest injuries were managed 54.7% were males and 45.3% females. Mean age of patient was 27.41 years. The common cause of injuries road traffic accident 73% While 14 % are involved in attacks and 8% stab wounds, 4% sustained trauma from falls and 0.7% was a gunshot. All patients had chest radiographs .The commonest abnormal findings were rib fractures 56.7%, haemothorax 14.7%, pneumo-haemothorax 14%, pneumothorax 11.3%. Main modality of treatment was conservative (58.7%) and 41.3% required tube thoracostomy. The commonest extra-thoracic associated injuries were limb fractures 37.3%, head and neck injuries 13.3%, 2.7% in the pelvis, The overall mortality rate was 2.1%.

Conclusion: blunt trauma of chest is the most common causes of chest injuries in adults in this study. The majority of the chest trauma is successfully managed by tube Thoracostomy and supportive measures.

Keywords: chest injuries, pneumothorax, thoracostomy, management, pattern, chest tube.

1. INTRODUCTION

The incidence of trauma has increased dramatically worldwide due to the rapid development of the motor vehicles and the rising rate of violence , which it impose a great challenge on the general surgeon to recognize and treat those patients . Most

persons, who experience torso trauma, whether blunt or penetrating, sustain some degree of associated injury to the chest. Thoracic injuries are a primary or contributing cause of death in nearly half of all cases of torso trauma [1]. Thoracic trauma is responsible for over 70 per cent of all deaths following road traffic accidents. Blunt trauma to the chest in isolation is fatal in 10 per cent of cases, rising to 30 per cent if other injuries are present [1]. The majority of chest injuries are confined to the thoracic cage. These consist of rib fractures with underlying pulmonary contusion, haemothorax, or pneumothorax, which can usually be dealt with simply and effectively by chest drain insertion and fluid restriction [2]. Advanced Trauma life support (ATLS) protocol forms the bedrock for the assessment and treatment prioritization of these patients. Which will lead to diagnoses of the twelve major life threatening injuries, may be encountered in victims of thoracic trauma. Six of them must be rapidly diagnosed and swiftly treated within the time frame of the primary survey because they have the potential to cause death (Lethal six)[3]. They include Airway obstruction, Tension Pneumothorax, Flail chest, cardiac tamponade, Open Pneumothorax and Massive haemothorax. The other six are unspecific, delayed, or obscured by other injuries and may actually be overlooked until they reveal themselves by late onset complications (hidden six). These are tracheobronchial disruption, pulmonary contusion, Traumatic disruption of the aorta, blunt cardiac injury, esophageal perforation and diaphragmatic tear [3]. Pulmonary injuries requiring thoracotomy are uncommon even in busy urban trauma centers. Simpler surgical techniques are frequently used for their management. Stapled pulmonary tractotomy has become the most frequently used lung sparing technique, and can manage 85% of all pulmonary injuries requiring surgical interventions. Despite recent advances, pulmonary injuries requiring resective procedures are marked by high morbidity and mortality. Blunt thoracic trauma can result in significant morbidity in injured patients. Both chest wall and the Intrathoracic visceral injuries can lead to life-threatening complications if not anticipated and treated. Pain control, aggressive pulmonary toilet, and mechanical ventilation when necessary are the mainstays of supportive treatment. The elderly with blunt chest trauma are especially at risk for pulmonary deterioration in the several days post injury and should be monitored carefully regardless of their initial presentation. Blunt

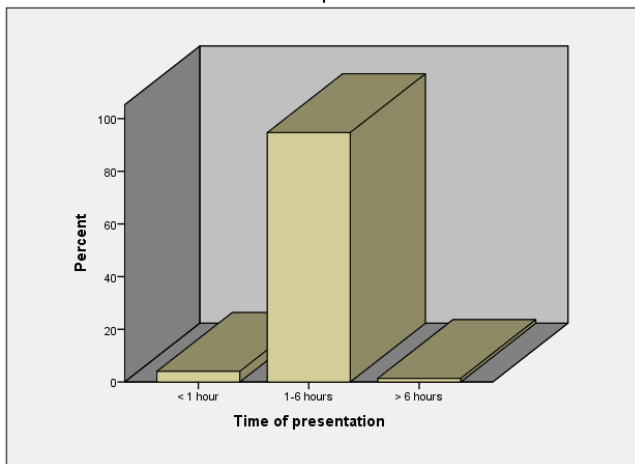
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thoracic trauma is also a marker for associated injuries, including severe head and abdominal injuries [7-45]. Rib fractures were the commonest specific thoracic injury. The diagnosis of rib fracture was both clinical and radiological, since the routine chest radiograph has only a sensitivity of only 20-50% in detecting rib fractures and chondral rib fractures are almost always invisible on chest radiograph unless the fractures involves a strongly calcified cartilage. Clinical diagnosis was based on the findings of pain on breathing, localized tenderness and presence of bony crepitus. Studies have shown that Ultrasound scan has a higher sensitivity than plain chest radiograph in detecting rib fractures while others have shown it is either equally sensitive or slightly better[8].

Fig (1) The time of presentation in chest trauma patients in the period of May 2013 - April 2014



II. PATIENT AND METHODS

This is an observational prospective analytical study hospital based study, conducted at Omdurman Teaching Hospital. The study population was composed of male and female patients who sustained chest trauma in the period May.2013 April.2014. A total number of 150 patients were included with the use of predesigned and pretested structured questionnaire. Non probability sampling including all patients admitted in the emergency department during the allocated period of study. Data analysis by using SPSS version 22. The percentage was calculated and chi-square test was used for the analysis. Test of significance was analytically accepted and P value 0.000. Ethical clearance and approval for conducting this study was obtained from the ethical committee of Omdurman Teaching Hospital. Informed verbal consent was obtained from the patients participating in this study after full explanation of the study objectives.

III. RESULTS

During the study period a total of 150 were included in this study 54.7% (n=82) were males and

45.3% (n=68) were females with a male to female ratio of 2.5 : 2.1 , The age ranged from 4 – 80 years with a mean age of 27.41(SD ± 13.5 years) Most of the patients were in the third decade of life (Table 1)..Majority of the patients 73% (n=110) were involved in road traffic accident 37.3% (n=56) were either driver or occupant and 36% (n=54) were pedestrians.

While 14 % (n=21) are involved in attacks and 8% (n=12) in stab wounds, 4% (n=6) sustained trauma from falls and 0.7% (n=1) was a gunshot (Table 2).

26.7% (n=40) of the cases were isolated thoracic injuries while 73.3% (n=110) were multiple injuries , 37.3% (n=56) the injuries included the extremities, 19.3% (n=29) in the abdomen, 13.3% (n=20) were in the head and neck ,the head was 9.3% (n=14) while the neck 4% (n=6), 2.7% (n=4) the pelvis was involved and 0.7% (n=1) had injury to the spine.

94.7% (n=142) presented to the hospital in the time period of 1to 6 hours, while 4% (n=6) presented in less than one hour and 1.3% (n=2) presented in more than six hours (Figure 1).

Most of the were clinically stable 61.3% (n=92), while 26.7% (n=40) experienced Dyspnea and 12% (n=18) were shock, no patient reported as cyanosed at the time of presentation.

Chest x-ray was the main modality of investigation 88.7% (n=133), 8.7% (n=13) had CT scan and ultrasound was done for 2.7% (n=4) at the emergency room, no patient had ABG in the ER .Patients diagnosed as rib fractures were 56.7% (n=85), while 14.7% (n=22) as haemothorax, 14.0% (n=21) as haemo-pneumothorax, 11.3 % (n=17) as pneumothorax, 1.3% (n=2) had flail chest, 1.3 % (n=2) as lung contusion, 0.7% (n=1) as diaphragmatic injury, no cardiac , major vessels or oesophageal injury were reported (Table 3). Conservative treatment was the main modality 58.7% (n=88) while 41.3% (n=62) underwent chest tube insertion, 58.% (n=36) of them the chest tube was on the right , 40.4% (n=25) was on the left side and 1.6 % (n=1) was bilateral.

The durations of the chest tube from two days in which was 37% (n=23), stayed for 3days 46.8% (n=29) and 14.5%(n=9) the chest tube stayed for 4 days and 1(1.6%) patient the chest tube stayed for 5 days which was due Dyspnea following the clamping of the chest for trial of removal in which the treating doctor chose to leave for consultation with his senior (Figure 2).

The admissions 61.3% (n=92) were admitted to the general ward while 32.7 (n=49) who had uncomplicated chest trauma were discharged home after necessary investigations, treatment and 6 hours observation in the accident and emergency department ,3.3% (n=5) were admitted to the ICU and 2.7% (n=4) to the HDU.

The duration of hospital stay was 12% (n=18) stayed less than 3 days while 48%(n=72) stayed between 3 to 7 days ,6% (n=9) stayed for 8 to 14 days

Only 1.3% (n=2) required a hospital stay of more than 2 weeks (Table 4).

Of the 150 patients 87.3 % (n= 131) had uneventful course while 10.7% (n=16) developed complications and 3 deaths accounted for 2%. The complication which were 3.3% (n= 5) developed pneumonia, 3.3% (n=5) had non-functioning chest tube, 2.7% (n=4) developed surgical emphysema ,2% (n=3) had sepsis and 1.3% (n=2) developed wound infections.

Those who sustained rib fracture 62.6% (n=82) 18.8% of them developed complications while those with Haemopneumothorax 35.1% (n=46) 6.5 % died and 23.9% developed complications, 6.3% of patients with flail chest or diaphragmatic injuries developed complications (Table 5).

The highest rate of complications was noticed in patients with associated abdominal injuries as bowel injury 37.1% and spleen 31.3% , while the mortality was

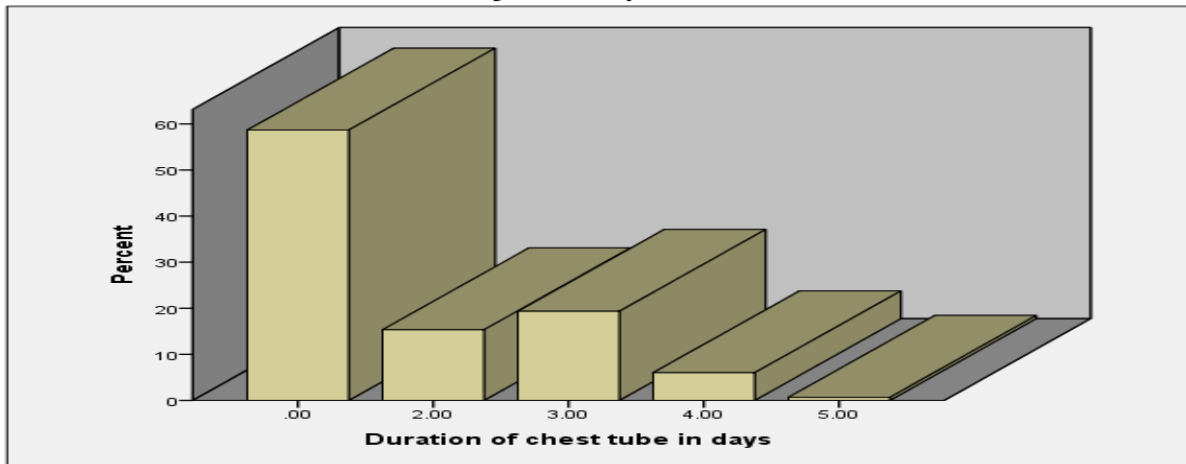
high in patients who suffered from extremities fractures 66.7% which was found to be statistically significant P value 0.000 (Table 6).

The causes of death were as follows one patient developed pulmonary embolism, one died from septicaemia and one patient had brain death

Table 1 : Age and gender in chest trauma patients in the period of May 2013 to April 2014

Age in years	Gender		Total
	Male	Female	
0 – 0- 10	3	2	5
10 11-- 20	23	19	42
20 21-- 30	31	23	54
30 31- 40	15	12	27
40 > 50	10	12	22
Total	82	68	150

Fig (2) Duration of chest tube in days in chest trauma patients in the period of May2013 - April 2014



IV. DISCUSSION

The study included 150 cases presented chest injuries with male predomance of 54.7% and it is consistent with other studies & the female population was 45.3% which showed higher incidence than other studies ^(9,10,11,12).

The most affected age group was those in the third decade of life 36% followed by teen agers 28% and it is consistent with all the studies reviewed.

Motor vehicle accident was the main cause of chest injuries 73% which similar to results in other studies ⁽⁸⁻¹⁹⁾

In contrast to two studies done Ali,Gali ⁽¹⁰⁾ and Maxwell et.al.⁽¹¹⁾ Found that penetrating trauma was the main cause of injuries 61.5% and 77% respectively.

Rib fracture was the most commonly encountered clinical type of chest injury 56.7% It has also been reported as the commonest chest injury which is lower in comparison with Muhammad Saaq⁽¹²⁾ but higher to Monafisha K Lema⁽¹³⁾ 20.7%, Massaga⁽¹⁴⁾

42.9%, Kesieme⁽⁷⁾ 49.3%, followed by haemothorax and Haemopneumothorax of 14% and 14.7% respectively which is lower than A Adem⁽¹⁵⁾as haemothorax 23.6% and Haemopneumothorax 66.7% . Misaun, et al.⁽¹⁶⁾ revealed that chest wall contusion was the commonest clinical type of chest injury, This was followed by Haemopneumothorax with the assumption that most of the rib fractures are associated with pleural or vascular injury due to their anatomical relations.

Table 2 : Mode of trauma sustained by patients in the period of May 2013 to April 2014

Mode of trauma	Frequency	Percent
Road traffic accidents	110	73.3
Attacks	021	14.0
Stab	012	8.00
Fall	006	4.00
Gunshot	001	0.7
Total	150	100.0

Table 3 : Diagnosis of patients with chest trauma in the period of May 2013 to April 2014

Diagnosis	Frequency	Percent
Rib fractures	85	56.7
Haemothorax	22	14.7
Haemopneumothorax	21	14.0
Pneumothorax	17	11.3
Flail chest	02	01.3
Lung contusion	02	01.3
Diaphragmatic injury	01	00.7
Total	150	100.0

Table 4 : Length of hospital stay in patients with chest trauma in the period of May 2013 to April 2014

Duration in days	Frequency	Percent
<3	18	12.0
3- 7	72	48.0
8-14	9	6.0
> 14	2	1.3
No admission	49	32.7
Total	150	100.0

Table 5 : Outcome in relation to the final diagnosis trauma patients in the period of May 2013 to April 2014

Diagnosis	Outcome			Total
	Uneventful	Death	Complications	
Rib fracture	62.6%	00.0%	18.8%	56.7%
Pneumothorax	09.9	00.0	25.0	11.3
Haemothorax	14.5	66.7	06.3	14.7
Haemopneumothorax	10.7	33.3	37.5	14.0
Flail chest	00.8	00.0	06.3	01.3
Lung contusion	01.5	00.0	00.0	01.3
Diaphragmatic injury	00.0	00.0	06.3	00.7
Total	87.3	002	10.7	100%

P value 0.000

The most commonly associated injury in this series is extremity injury 37.3% which is higher than Massaga (14)25.2% , A Adem A ,et al. (15)5,6% and Misauno ,et al.(16)19.4%.

head injuries were 19% This lower than Monafisha K Lema(13) 33.3%, while Massaga and Misauno ,et al, 21.8%,16.3% respectively studies lies within same range (14,16) and higher than Adem A,et al.(15) 4.2% and Mohamed N. Albadani(17) 5.4%. Abdominal injuries was 6% which is similar to A Adem(15) 5.6 and

Hanafi(18) 5% but significantly lower than Misauno ,et al.(16) 12.2% and massaga(14) 16.8% and Mohamed N. Albadani(17) 10.7%.

The time of reporting to the hospital 94.7% were the in the time period of 1-6 hours while 4% did presented in less than hour and 1.3% presented after 6 hours which is comparable with result of Mohan Atri ,et al. as he found 75.8% of his cases presented in the first 4 hours (19) .

61.3% presented were hemodynamically stable while 26.7% were having Dyspnea and 12% presented with shock.

The majority of the patients (58.7%) were managed conservatively by observation analgesia and oral antibiotics 41.3% received management by chest tube one patient had a bilateral chest tube due to bilateral Haemopneumothorax , compared to Mohan Atri ,et al. chest tube was done in 48.4% patients, while in Mohamed N. Albadani 71.5% , HZ Ashraf ,et al. 41.38% were successfully managed by chest tube, the duration of the chest tube ranged from 2-5 days With mean duration of 2.9 days (17,19,20).

The complication rate is 10.7% which is low in comparison to Mohammed N.Albadani who had complication rate of 20%, Baily Rc has 30% while F.A Massaga who find rate of 32.9%, the complication rate depends on many factors the type and the severity of the injury the associated body part involved and the duration of the chest tube stays as it as linear relationship with complication rate (14,17,21) .

The total mortality was 2% which comparable with to Misauno 4.5%, Mohan Atri ,et al. 5%, Kesieme EB ,et al. 9.9% , Umer M. Tariq ,et al. 3.1% this low mortality may contributed to the fact that the majority of the patient did not suffer from severe trauma and the status of other organ involved(7,16,19,21) .

Table 6 : associated injuries effect on the final outcome trauma patients in the period of May 2013 to April 2014

associate d injuries	Outcome			Total
	Uneventful	Deat h	Complication s	
Bowel injury	04.6%	0.00%	37.5%	8.0%
Diaphragm	0.00	0.00	06.3	00.7
Liver	0.00	0.00	06.3	00.7
Spleen	01.5	0.00	31.3	04.7
Soft tissue injury	09.9	33.3	06.3	10.0
Extradural hematoma	02.3	0.00	06.3	02.7
Extremities fractures	54.2	66.7	06.3	49.3
Pelvis injury	02.3	0.00	0.00	02.0
No other organs involved	25.2	0.00	0.00	22.0
Total	100	100	100	100.0 %

P value 0.000

V. CONCLUSION

Chest trauma is an important public health problem accounting for a substantial proportion of all trauma admissions at Omdurman teaching hospital, the pattern of chest trauma and its management was almost similar to many series although the female incidence showed to be higher than other series.

Road traffic accident continues to be the major etiological factor for chest injuries and the commonly affected victims are young adult males in their productive and reproductive age group.

The majority of the chest traumas are successfully managed by tube Thoracotomy and supportive measures as well. Other organs or systems should be carefully assessed for associated injuries or damages.

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Outcome of Coronary Artery Bypass Graft Surgery in Elshaab and Ahmed Gasimhospitals (2012-2015)

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Abstract- Objectives: The aim of this study was to reveal the mode of presentation of coronary artery disease(CAD) and the outcome of coronary artery bypass graft surgery(CABG)

Methods: This was a retro-prospective study conducted in El shaab and Ahmed Gasim Hospitals from 2012 to 2015. Fifty nine patients were included in the study of whom 49(83.1%) were males and 10(16.9%) were females.

The study variables included; patients demographics, etiological risk factors, form of presentation, blood and imaging investigations, indications for coronary artery bypass graft (CABG) surgery, modalities of CABG surgery, prognostic risk factors and outcome of CABG.

GJMR-I Classification: NLMC Code: WG 595



Strictly as per the compliance and regulations of:



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Husham Abdallah Yahya Yousif

Cardiovascular disease is the leading cause of mortality and important cause of disability. Worldwide, cardiovascular disease (CVD) is responsible for 30% of all deaths and 10% of DALYs (disability-adjusted life Years). In Africa, the burden of cardiovascular disease is increasing rapidly and it is now a public health concern. It has a major socio-economic impact on individuals, families and societies in terms of health care cost, work absenteeism and national productivity.

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The study variables included; patients demographics, etiological risk factors, form of presentation, blood and imaging investigations, indications for coronary artery bypass graft (CABG) surgery, modalities of CABG surgery, prognostic risk factors and outcome of CABG.

Results: The ages of the patients ranged between (43 – 77 Years) with mean age of 60.23, 46 patients (78%) were from central part of Sudan, 15 patients (25.5%) had more than one risk factor, 34 patients (57.6%) had single risk factor and 10 patients (16.9%) had no identified risk factor. DM was found in 26 patients (44.8%) and so was HTN. 11 patients (18.7%) presented with MI. All patients underwent ECG, Echo., Blood tests and coronary angiography, 30 patients (50.8%) had 3 vessel disease., Thirty six patients (61.0%) underwent on-pump CABG, 23 patients (39%) underwent off-pump CABG. Six patients (10.2%) had small Rt. Coronary artery, 2 patients (3.4%) had severe pulmonary hypertension and 1 patient (1.7%) had raised serum creatinine. Fifty one patients (86.4%) were discharged within first seven postoperative days, 6 patients (10.2%) were discharged within more than 7 days and 2 patients (3.4%) died within first 7 postoperative days. All patients had sternal wounds healed within one Month postoperatively and those with coexisting leg wounds; 3 (5.1%) had leg wounds infection within this period, 51 patients (86.4%) had relieved angina, 52 patients (88.1%) had improved physical activity and the same number of patients achieved psychological improvement within the same period.

Conclusion: Patients with more than one risk factor presented with more severe form of CAD. Off-pump CABG

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had good results in some selected cases with regard to postoperative morbidity and mortality.

I. PATIENTS AND METHODS

a) Study Design

It is descriptive retro-prospective study

b) Study Area

A hospital based study that was conducted in Ashaab and Ahmed Gasim Hospitals

c) Study period

was carried out during the period extending from 2012 to 2015 as one Year prospective and 2 Years retrospective.

d) Study Population

Adult patients who underwent CABG in the study area during research period.

e) Patients' selection

i. Inclusion criteria

Adult patients who underwent CABG regardless of their gender.

ii. Exclusion criteria

Adult patients who didn't undergo CABG and patients aged below 14 Years.

iii. Sampling

Non probability sampling technique

iv. Sample size

All patients who meet the inclusion and exclusion criteria during study period

v. Study technique

Research team

vi. Author

The Surgical Registerars who look after patients.

vii. Data collection

It was carried out using structured pretested questionnaire

viii. Data variables

It included personal data, etiological risk factors of CAD, mode of presentation, tools of diagnosis, modalities of CABG, indications for CABG, prognostic risk factors and outcome.

II. RESULTS

Fifty nine patients with CAD were enrolled in this study from 2012 - 2015. Of the total number; 49 patients (83.1%) were males and 10 patients (16.9%) were females.

Their ages ranged between (43 – 77 Years) with mean age of 60.29 and 8.305 Std. deviation. With regard to their geographical distribution; 46 patients(78%) were from central part of Sudan, 6 patients(10.1%) were from Northern Sudan, 5 patients(8.5%) were from Western Sudan, 2 patients(3.4%) were from Eastern Sudan and no patient from Southern included in the study.

a) Etiological risk factors

Diabetes mellitus represented risk factor in 26(44.8%) patients and it was the most common risk factor alone followed by hypertension, and in coexistence with other risk factors hypertension was the most common; as 13 patients(22%) were diabetic only, 12 patients(20%) were both diabetic and hypertensive and 1 patient(1.7%) was diabetic and smoker. 12 patients(20.3%) were hypertensive only, 2 patients(3.4%) were both hypertensive and smokers, 7 patients(11.9%) were smokers only, 2 patients(3.4%) had hyperlipidemia. There was no positive family history or hyperurecemia as CAD risk factor among the patients enrolled in the study and 10 patients(16.9%) did not have identified risk factor

b) Form of presentation

Thirty three patients(55.9%) presented with stable angina, 11 patients(18.7%) with unstable angina and other 11 patients(18.7%) with myocardial infarction. 4 patients(6.8%) had no angina or myocardial infarction. With regard to shortness of breathing according to American thoracic society scale; 6 patients(10.2%) with grade 0 dyspnea, 9 patients(15.3%) presented with grade 1 dyspnea, 4 patients presented with grade 2 dyspnea, 5 patients(8.5%) with grade 3 dyspnea, and other 4 patients(6.7%) with grade 4 dyspnea. And 31 patients(52.5%) had no dyspnea.

c) Investigations

All patients underwent ECG, echocardiogram, blood tests and coronary angiography.

d) Modalities of CABG

Thirty six patients(61.0%) underwent on pump CABG and 23 patients(39%) underwent off pump CABG. Indications of CABG: Three vessel disease represented indication of CABG in 30 patients(50.8%), critical artery disease untreated by catheter was indication in 14 patients(23.7%), two vessel disease with normal ejection fraction was indication in 11 patients(18.7%), Lt. main artery disease was indication in 3 patients(5.1%) and two vessel disease with decreased ejection fraction was indication in 1 patient(1.7%) (Table 6)

e) Prognostic risk factors

Concerning prognostic risk factors; severe pulmonary hypertension was found in 2 patients(3.4%), raised serum creatinine in 1 patient(1.7%), small Rt. Coronary artery was found in 6 patient(10.2%) and there was no identified prognostic risk factor in 50 patients(84.7%).

f) Early outcome

Fifty one patients(86.4%) were discharged within seven postoperative days from hospital, 6 patients(10.2%) were discharged within more than 7 postoperative days because of chest infection and all of them were above the age 60 Years, 2 male patients(3.4%) had died within first seven postoperative days(one (75 Years old) died on day zero in ICU because of respiratory failure and he was known diabetic and presented with unstable angina and grade 3 dyspnea according to ATSS preoperatively. The other patient(63 Years old) died on day 1 in ICU because of heart failure he was also diabetic presented with stable angina with grade 3 dyspnea preoperatively).

g) Late outcome(one Month postoperative)

All had sternal wounds healed within one month postoperatively as well as stable sternum and those with coexisting leg wounds, 3 of them had leg wound infection within one month postoperatively.

Fifty patients(84.7%) had decreased antianginal drugs within one month postoperatively, 9 patients(15.3%) did not had decreased antianginal drugs. Fifty one patients(86.4%) had relieved anginal pain, 8 patients(13.6%) were still suffering from variable range of severity of symptoms, 4 patients(6.7%) had recurrent angina and 3 of them underwent catheterization. 52 patients(88.1%) had improved physical activity and the same number of patients achieved psychological improvement within one Month postoperatively and no death occurred during this period.

Table 1 : Geographica distribution of CAD risk factors

	Center	North	West	East	Total
DM	10	2	1	0	13(22.4%)
HTN	10	2	0	0	12(20.3%)
smoking	6	0	1	0	7(11.9%)
hyperlipidemia	2	0	0	0	2(3.4%)
DM & HTN	9	1	1	1	12(20.3%)
DM & smoking	1	0	0	0	1(1.7%)
HTN & smoking	1	0	1	0	2(3.4%)
No risk factor	7	1	1	1	10(16.9%)
Total No. & (%)	46(78%)	6(10.2%)	5(8.5%)	2(3.4%)	59(100%)

Table 2 : Correlation between gender and CAD risk factors

Risk factors	Gender		Total No.&(%)
	Male	Female	
DM	10	3	13(22.1%)
HTN	19	3	12(20.3%)
smoking	7	0	7(11.9%)
hyperlipidemia	2	0	2(3.4%)
DM & HTN	10	2	12(20.3%)
DM & smoking	1	0	1(1.7%)
HTN & smoking	2	0	2(3.4%)
No risk factor	8	2	10(16.9%)
Total	49	10	49(100%)

III. DISCUSSION

Internationally, CAD affects women in postmenopausal age at the same frequency as men and in the Western World ; it has now surpassed cancers of all types as a leading cause of mortality in females (Crouse and Kramer, 1996). It is known that when female patients present chest pain, they are more likely to have other problems than CAD compared to males with chest pain (Crouse and Kramer, 1996; Miller et al., 2001). This notion may probably be the cause of gender disparities noted in the management of female CAD population not only at primary health care level (Crilly et al., 2008; Bosner et al., 2009) but also at the level of diagnostic work up and choice of revascularization procedure. Under referral of female patients for exercise test and coronary angiography has not only been shown when they present with chest pain (Daly et al., 2006; D'Hoore et al., 1994; Petticrew et al., 1993) but also when they have proven CAD presenting in the form of acute MI (Ayanian and Epstein, 1991; Nguyen et al., 2008; Dellborg and Swedberg, 1993; Alpert and Dalen, 1993). Variability in the results of these studies could be explained by differences in practice patterns by different centres and could also be influenced by regional, cultural and socio-economical factors affecting the health care dynamics of female patients (Ghali et al., 2002). Since the interplay of the above factors is unique in each society, the results from any given study can not be universally applied. There is thus need to study local factors affecting any population

before health care practices and policies may be modified.

With reference to data from Sudan heart institute, CAD is predominantly a male disease in Sudanese as is the case of the rest of the world the ratio was 28% females and 72% males in MI trial. And 32% females and 68% males in the CABG group. In our study 83.1% (n = 49 pt.) of the total number (59 pt.) were males and 16.9% (n = 10 pt.) were females. In MI group excluding those with previous history of IHD the mean age of patients was 57 Years, and the mean age of patients in CABG group was 61 Years same as age of South Asian patients and younger than European patients (1). In our study the mean age of the patients who underwent CABG was 60.29 with standard deviation of 8.305 which is very close and also comparable to the mean age in CABG group.

With regard to the geographical distribution of CAD, 78% (n = 46) of patients who underwent CABG in our study were from the central part of the Sudan; the fact that may support the incrimination of environmental risk factors like (sedentary life style, high fat diet, local tobacco abuse) as a cause beyond increasing incidence of CAD in developing World (1).

Globally, diabetics are at 4 folds increased risk of developing CAD than are normal individuals (2). Patients with type 2 diabetes without a prior MI (mean age of 58 Years) are at the same risk of MI (20 – 19 percent) respectively and coronary mortality of (15 versus 16 percent) as patients without DM who had a prior MI. (3) And hypertension accounts 47% of all IHD events globally (14). Fourteen studies were reviewed for the

association between smoking and risk of CAD. The definition of smoking applied varied between studies, which included former smokers and current smokers. Former smokers had a risk ratio of 0.68 for CAD when compared to never smokers, while current smokers had a risk ratio of 1.81. When stratified by diabetic and non-diabetic populations the adjusted risk ratios were not significant.

One study, in addition to reporting on the association of the risk factors of interest, also reported association between composite risk factors and risk of CAD. The composite risk factor was defined as having any 1, 2, or 3 of the conditions, which include hypertension, smoking, high TC, low HDL – C, diabetes and obesity. Among CAD patients, 83.7% had at least 1 risk factor, 47.6% had at least 2, and 18.5% had at least 3 risk factors. Among patients with no CAD, only 64.7%, 25.3%, and 6.6% had at least 1, 2, or 3 risk factors respectively. And these were each statistically different from the results for CAD patients. Of all patients with at least one risk factor, CAD patients had more additional risk factors than non-CAD patients by a factor of more than 2, to 1. Additionally, each of the individual risk factors were significant contributors to the risk of CAD(4).

Twelve studies were selected for review on the association between lipid conditions and risk of CAD. Three studies reported the association between hyperlipidemia and risk of CAD, 2 between dyslipidemia and risk of CAD and 10 between values on total cholesterol (TC) and triglyceride (TG), LDL – C, HDL – C and risk of CAD. For the association between hyperlipidemia and the risk of CAD, significant crude and adjusted odds ratios were reported in only one case-control study conducted in Shenyang, where the crude OR was reported as 2.77 and adjusted OR as 2.63 (95% confidence interval [CI]: 2.32 – 2.99). The criteria for defining hyperlipidemia were not provided in this study(5).

In Sudan like many other less-developed countries, particularly in sub-Saharan Africa, most of data on disease burden come from extrapolations, as in the Global Burden of Disease Study (GBDS), which relies on cause of -death- models and expert opinion(8). According to Sudan Heart Journal 2013; a comprehensive search in the internet for any topic related to the epidemiology of CAD in Sudan was done, using terms such as prevalence, incidence, mortality, morbidity, risk factors, ischemic heart disease, coronary artery disease, myocardial infarction, acute coronary syndrome and angina with no joy. Website of the Sudanese Ministry of Health was also logged into looking for any statistics related to CAD in Sudan. The epidemiology of CAD in Sudan is derived exclusively from the United Nations projected global burden of CAD(2). In this retrospective study which depended on patients files and notes, the prevalence of risk factors in

CAD patients referred for CABG was as follows: diabetes 49%, hypertension 47%, tobacco abuse 41%, and family history(6) 23%.

In our study, 26(44%) were diabetics and the same ratio were hypertensive, 10 patients(16.9%) were smokers, 2 patients(3.4%) were hyperlipidemic all alone in addition to those with coexisting risk factors. DM was the most common single risk factor 22%(n = 13) followed by HTN 20.3%(n = 12), hyperlipidemia was the less common risk factor followed by smoking and no patients identified with hyperurecemia or positive family history for CAD and 10 patients had no risk factor.(Tables 1, 2, 5). Twenty one of diabetic patients(35.6%) underwent CABG were males and 5 patients(8.5%) were females, the ratios of gender distribution in hypertensive patients were the same as in diabetics. No females recorded with hyperlipidemia or history of smoking in our study. Thirty four patients(57.6%) presented with single risk factor and 15 patients(25.5%) presented with 2 risk factors.

According to patient data from National Registry of MI of USA, of the total number(1.14 million patients) in the study with acute MI, about 35% of patients with acute MI may not have chest pain upon their arrival to emergency department(7).

In our study, of the total number(59 patient) 18.7%(n = 11) of patients presented with MI, majority of them presented with composite risk factor(5 patients with both DM and HTN) and among single risk factors HTN was the most common(3 patients). Other eleven patients presented with unstable angina, 55.9%(n = 33) presented with stable angina and 6.7%(n = 4) had no angina. Table(3). With regard to shortness of breathing according to ATSS; Four patients(6.7%) presented with grade 4 dyspnea with 1 : 3 female to male ratio and 31 patients(52.6%) had no dyspnea table.

In a clinical study published in African Journals on line via Sudan Journal of Medical Science 2012; It was revealed that the Lt. anterior descending artery(LAD) was the most involved and the Lt. main artery(LM) was the least involved(6).

In our study, 30 patients(50.8%) presented with three vessel disease, 14 patients(23.7%) presented with critical artery disease untreated by catheter, 11 patients presented with 2 vessel disease with decreased ejection fraction, 3 patients(5.1%) presented with LM artery disease and 1 patient presented with 2 vessel disease with normal ejection fraction (Table 6). Over all, LAD was the most common vessel to be involved and LM was the least commonly involved as was the case in the study mentioned above.

There is general agreement that CABG improves prognosis in the early postsurgical Years in those patients with symptomatic LM coronary artery stenosis or stenosis of three main coronary vessels although this advantage is not to be significant after 10 – 12 Years(Cundiff 2002, Hlatkyetal; 2004). However,

cardiac surgery has advanced to appoint where mortality rates have declined dramatically(8).

With reference to (PMC – US National library of medicine – National institute of health science); up to 25% of CABG operations are off pump, they are as safe as on pump and in experienced hands have less early postoperative complications. In our study, 36 patients(61.0%) underwent on pump CABG, 5 of them(8.4%) were females and 31(52.5%) were males. Twenty three patients(39%) underwent off pump CABG, an other 5 were female and 18(30.5%) were males and no patient with CAD underwent minimally invasive CABG (Tables 6, 7 ,8). Most of patients underwent on pump CABG 40.7%(n =24)were having 3 vessel disease and most of those underwent off pump CABG were those with critical artery disease untreated by catheterization 22.4%(n = 13) Table(6). Nine patients(15.3%) had ungraftable vessels, among them, 6 patients(10.2%) had small Rt. Coronary artery and 3(5.1%) had severely diseased circumflex artery. Left internal mammary artery graft was used in 53 patients(89%), bilateral internal mammary artery graft was used in one patient(1.7%) and this had severely calcified aorta and saphenous vein graft(SVG) was used in 18 patients(30,5%) in 2 patients the SVG was harvested infrainguinal and for the rest of them it was below knee. With regard to associated cardiac comorbidities, One(1.7%) female patient of 78 Years old presented with history of aortic valve replacement because of severe aortic stenosis and one male patient presented with Lt. ventricular thrombus, severe pulmonary hypertension and low ejection fraction.

With reference to Journal of Cardiothoracic Surgery published online in Dec.2014 areview of retrospective analysis in myocardial preservation techniques during coronary artery bypass graft surgery: are we protecting the heart?. Data was analyzed for 54 patient undergoing CABG surgery. Twenty eight patients received antegrade cold blood cardioplegia(group 1), 16 patients received cross clamp fibrillation(group 2) and 10 antegrade retrograde warm blood cardioplegia (group 3). No significant difference was found with respect to baseline patient baseline characteristics. Expectedly , cross-clamp time was significantly lower in group 2. However, all the remaining paramerters were similar among the 3 groups. In current practice the route of delivery is at the surgeons discretion and as such there is no consensus on using specific route to supply the cardioplegia into the myocardium. The most common technique used by the majority of cardiac surgeons is the antegrade route. Although significant clinical evidence favours the saftey of this method, severe coronary artery stenosis in patients undergoing CABG may prevent the uniform distribution of cardioplegicsolusion through the myocardium and, importantly,

sub-optimal or inadequate distribution to parts of the myocardium increases the risk for PMI. Aproposed solution to overcome this limitation is the retrograde rout of delivery⁽⁹⁾.

But finally, the population size in these studies was too small to come to a meaningful conclusion on the benefit of particular protection strategy. In our study, 54 patients (91.6%) underwent antegradecardioplegia and 5(8.4%) patients underwent retrograde cardioplegia because of severely stenosed coronary ostia⁽⁹⁾.

With regard to outcome of CABG, one study found that 50% of patients were significantly depressed 8 days postsurgery, but this declined substantially with time to 24% 8 weeks postsurgery and 22% at 12 Months(64,65). Assessment of quality of life(QOL) 3 Months before and after heart surgery found that physical mobility was improved in 77% of patients(Wilson-Barnett 1981). Upto 80 of CABG patiets were angina free upto 5 Years after surgery(Fihn et al 2001). Twenty three percent of CABG patients were rehospitalized in the first 6 Months following surgery, cardiac problems were responsible for 32% of problems: cardiac complications 14%, gastrointestinal difficulties 14% and problems in other organ systems 45%(Jenkins et al, 1983)

Concerning the outcome of CABG in our study; fifty one patients(86.4%) were discharged within the first seven postoperative days from hospital, 6 patients(10.2%) were discharged after more than 7 postoperative days because of chest infection, all of them were males and above the age of 60 Years, 3 of them underwent on pump CABG and the other 3 off pump CABG, three patients had single risk factor and other 3 had 2 risk factors,(2 of them were hypertensive an other 2 were both hypertensive and diabetic, 1 was only diabetic and an other one was both diabetic and smoker), HTN and DM were the most common risk factors both alone and in coexistence, and all patients without identified risk factor were discharged within first postoperative week. Two (3.4%) male patients had died within first seven postoperative days: one(75 Years old) died on day zero in the ICU because of respiratory failllure due to severe pulmonary hypertension. The other patient(63 Years old) died on day one in the ICU with heart failure. Both patients were known diabetic, presented with grade 3 dyspnea according to ATSS and both of them underwent on pump CABG. The first patient presented with unstable angina and the second patient presented with stable angina. One Month postoperatively all patients had healed sternal wounds as well as stable sternums and those with coexisting leg wounds 3 patients(5.1%) had leg wound infection within this period and both were known diabetic and above 70 Years. Fifty patients(84.7%) had decreased their antianginal drugs,52 patients(88.1%) had improved their physical activity and the same number of

patients achieved psychological improvement, 51 patients (86.4%) had relieved anginal pain, 6 patients were still suffering from variable range of severity of angina 1 (1.7%) of them was female and 5 (8.4%) were males, 2 were hypertensive and diabetic, 1 diabetic only, 1 smoker and 1 had no risk factor, 2 presented with no dyspnea, 1 with grade 0, 1 with grade 1 and 2 with grade 4 dyspnea according to ATSS. Five of them underwent on pump CABG and 1 off pump CABG.

IV. COCLUSION

- Coronary artery disease was predominantly male disease in Sudanese patients in El shaab and Ahmed Gasim Hospitals
- Great majority of CAD patients were from central part of Sudan
- Diabetes and hypertension were equal in frequency as etiological risk factors followed by smoking and no patients with positive family history or hyperuricemia were identified in the study
- Significant number of patients had no identified etiological risk factor
- Stable angina was the most common form of presentation followed by equally frequent unstable angina and myocardial infarction
- Majority of patients presented with MI were those with more than single risk factor
- On pump CABG was the most common modality of surgical treatment and three vessel disease was the most common indication for CABG
- Off pump CABG had good outcome in some selected cases with regard to postoperative morbidity and mortality

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Importance of Primary Prevention for Arterial Hypertension and Cardiovascular Risks

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Abstract- Summary Arterial hypertension is a mass, non contagious disease influenced by numerous risk factors and itself presents a risk factor for cardiovascular and cerebra vascular disease, kidney disease and peripheral blood vessel disease. (1) Therefore, primary prevention today contains cardiovascular risk assessment, based on SCORE (Systematic Coronary Risk Evaluation) charts which are used to assess ten years risk for initial (first) fatal arteriosclerotic event. Our research covered 39 subjects with arterial hypertension, both genders, aged between 40 and 54, who were motivated for decisive implementation of primary prevention measures in accordance with recommendations for cardiovascular diseases prevention and which are promoting healthy life style.

Keywords: *primary prevention, arterial hypertension, cardiovascular risk, score.*

GJMR-I Classification: *NLMC Code: WG 106*



Strictly as per the compliance and regulations of:



Importance of Primary Prevention for Arterial Hypertension and Cardiovascular Risks

Semiz LJ^α & Semiz Z Z^σ

Summary : Arterial hypertension is a mass, non contagious disease influenced by numerous risk factors and itself presents a risk factor for cardiovascular and cerebra vascular disease, kidney disease and peripheral blood vessel disease.

(1) Therefore, primary prevention today contains cardiovascular risk assessment, based on SCORE (Systematic Coronary Risk Evaluation) charts which are used to assess ten years risk for initial (first) fatal arteriosclerotic event. Our research covered 39 subjects with arterial hypertension, both genders, aged between 40 and 54, who were motivated for decisive implementation of primary prevention measures in accordance with recommendations for cardiovascular diseases prevention and which are promoting healthy life style. The accent was on body weight correction with intensification of physical activities, diet correction and reduction of smoking. After 6 months of consistent application of primary prevention measures, statistically significant reduction of BMI values have been achieved between first and second measure readings. Influence of primary prevention measures led to statistically significant reduction of WHR values as well as statistically significant reduction of cardiovascular risk during 6 months of primary prevention implementation.

Keywords: primary prevention, arterial hypertension, cardiovascular risk, score.

I. INTRODUCTION

Arterial hypertension is a mass, non contagious disease influenced by numerous risk factors and itself presents a risk factor for cardiovascular and cerebra vascular disease, kidney disease and peripheral blood vessel disease. Therefore, primary prevention today contains cardiovascular risk assessment. Based on SCORE charts (Systematic Coronary Risk Evaluation) a ten year risk for first fatal arteriosclerotic event is assessed (heart attack, stroke or other occlusive arterial disease including sudden heart death) and it is significantly changing depending on presence of relevant risk factors (1). Also, therapeutic intervention is necessary for any individual risk factor having in mind multifactor cause and multiplicative effect of individual risk factors to cardiovascular risk (2,3).

Base of cardiovascular disease prevention is healthy life style propagation, where preventive activities are based on continuous, repetitive education of patients, constant support for consistent behavior and monitoring the ways decisions are implemented. WHO

stop smoking algorithm (5A) ask, assess, advise, assist, arrange – are certainly applicable for monitoring and correction of other risk factors as well (4,5).

II. MATERIALS AND METHODS

Trial was conducted in ZU SC “Poliklinika Semiz” Clinic in Prijedor and involved 39 subjects with arterial hypertension, both genders, aged between 40 and 54. From the group of patients which didn't had changes on target organs, individuals particularly motivated for life habits correction were selected, where correction included intensification of physical activities, reduction of smoking, correction of nutritive habits and body weight correction. The goal was to show that with life style change, with psychological support, nutritionist supervision, continued education and strong motivation on side of patient it is possible, for persons with arterial hypertension which are submitted to primary prevention measures implementation, to reduce overall cardiovascular risk by correction modifiable risk factors, with emphasis on body weight correction (6,7).

HTA diagnosis and assessment of changes presence on target organs were done trough detailed clinical approach, target organs condition assessment with appropriate diagnostic laboratory, radiology and echo sonographer methods. All patients were assessed for abdominal (visceral) obesity, which is characterized by accumulation of fat tissue as metabolically and endocrine active organ in areas of stomach, peritoneum, and around visceral organs. According to WHO, it is defined by waist circumference at ≥ 80 cm for female and ≥ 94 cm for male Caucasian. Even though the waist circumference (WC) as well as the WC and hip circumference ratio

(WHR: waist to hip ratio) are important for assessment of cardiovascular risk, BMI remains the standard for overweight and obesity detection in everyday practice (5,6).

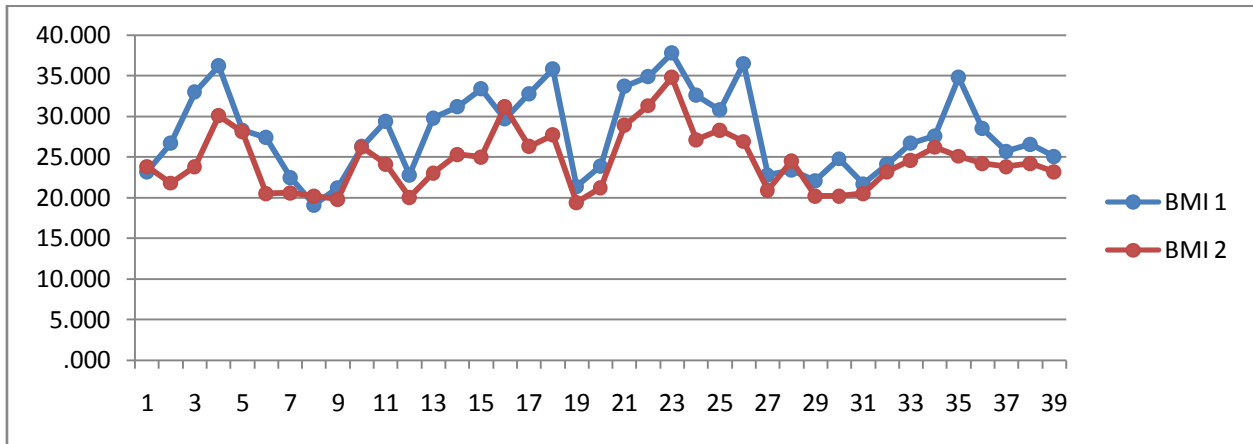
An retrospective – prospective analysis has been done. Statistical processing has been done using T- test paired samples (repeated measuring), in SPSS 20 program (8) and also using eta square formula (9).

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III. RESULTS

Graph1 : Effects of measuring primary prevention to BMI

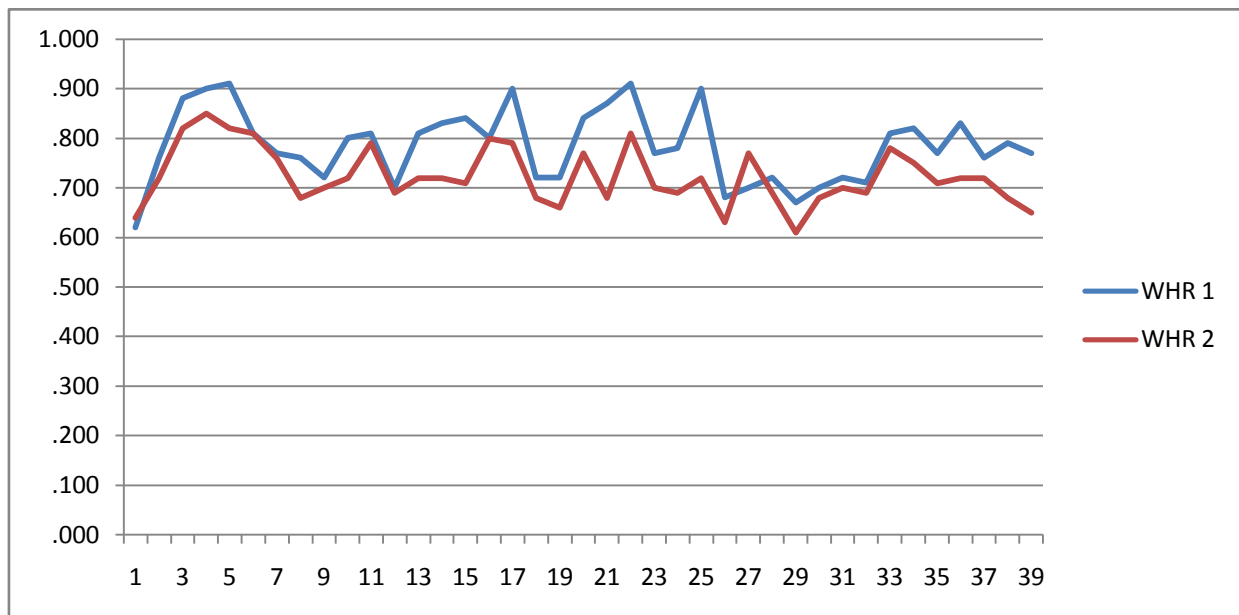


($t=7,2; df=38; p<0.0005$)

For BMI it's determined statistically significant reduction of values since first measuring (M=28.06; SD= 5.09) until the second measuring 6 months later (M=24.52.SD 3.69), $t(38)=7.2; p<0.0005$.

Average reduction of BMI coefficient was 3.54, while interval of 95% trust was ranging from 2.54 – 4.53. Eta square value (0.58) shows that the influence of primary prevention was significant.

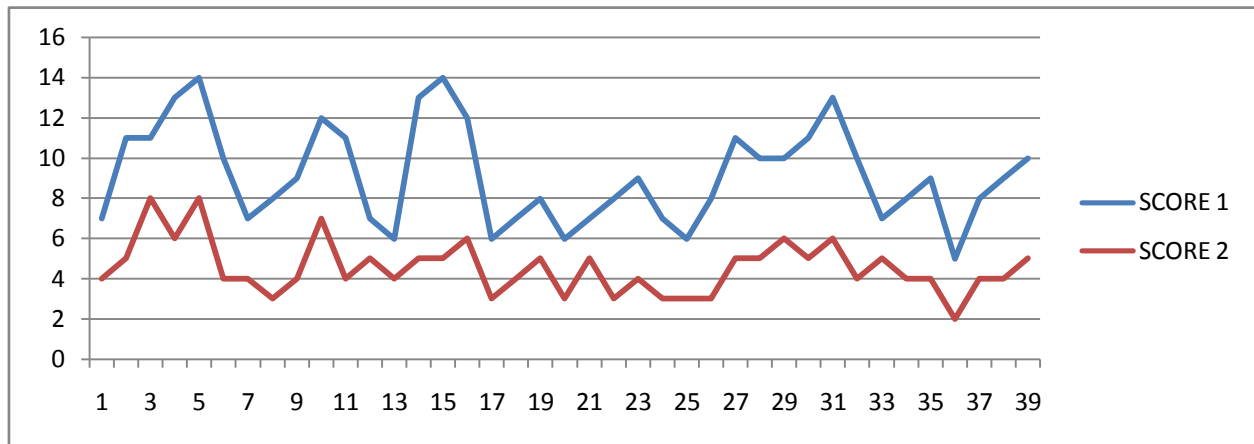
Graph 2 : Influence of primary prevention measures to WHR



($t=7,3; df=38; p<0.0005$)

For WHR a statistically significant reduction of values has been determined since the first measuring (M=0.78; SD=.073) to the second measuring after six months (M=0.72; SD=0.058), $t(38)=7.3; p<0.0005$. Average reduction of WHR coefficient was .060, while interval of 95% trust was ranging from 0.04-0.08. Eta square value (0.58) shows a great significance of primary prevention influence.

Graph 3: Influence of primary prevention measures to cardiovascular risk



$t=16.7$; $df=38$; $p<0.0005$.

SCORE has shown statistically significant reduction of values since first measuring ($M=9.18$; $SD=2.44$) and second measuring six months later ($M=4.54$; $SD=1.33$), $t(38)=16.7$; $p<0.0005$

Average reduction of SCORE coefficient was 4.64, while interval of 95% trust was ranging from 4.08 – 5.20. Eta square value (0.68) shows great influence of primary prevention.

IV. DISCUSSION

Recommendations of numerous world societies for cardiovascular diseases prevention in clinical practice are today clear and well documented. But there is a discrepancy between valid recommendations and consistency of its application in everyday clinical practice. The reason is probably in fact that it's still much easier to prescribe and consume a medicament than change existing life habits. Therefore it is a serious task for all health systems in world and demands plenty of energy and persistence. Strategy needs to be based on population and individual approach, coexisting together (10).

In our work we have shown that persistent implementation of primary prevention measures accomplished statistically significant reduction of values between first and second measuring during the six months period. ($t=7,2$; $df=38$; $p<0.0005$).

Influence of primary prevention measures to WHR led to statistically significant reduction of values between first and second measuring during the six months period. ($t=7,3$; $df=38$; $p<0.0005$).

Cardiovascular risk was statistically significantly reduced during the 6 months of primary prevention implementation ($t=16.7$; $df=38$; $p<0.0005$).

Manny authors like Di Chiara and associates followed mortality related to cardiovascular diseases and calculated percentage of contribution for risk control factors to reduction of overall coronary diseases mortality. Reductions in tobacco smoking, appropriate medical examinations of blood pressure and cholesterol

concentration had reduced coronary mortality for over 50%. But in everyday practice target values of risk factor are below 50%. EUROSPIRE I and II studies (secondary prevention) and especially EUROSPIRE III (primary prevention) results were devastating, and according to them over the time in monitored population there was no reduction in number of smokers, any improvement in arterial pressure control and recorded increase of individuals with visceral obesity. Only improvement was in dyslipidemia control (11). On the other hand, integration of calculators and guided non pharmaceutical and/or pharmaceutical intervention with electronic health charts in New Zealand for primary health protection (PREDICT- CVD) has increased a rate of cardiovascular diseases selection from 4.7% to 53.5% (12,13).

Primary prevention is one of the greatest challenges of contemporary medicine (14).

V. CONCLUSIONS

Implementation of primary prevention measures for patients with arterial hypertension, who are motivated for correction of life style and consistent throughout the entire 6 months monitoring has shown following:

Statistically significant reduction of BMI value was recorded between the first measurement and second measurement taken 6 month later.

Statistically significant reduction in WHR value in index of visceral obesity was recorded between the first measurement and second measurement taken 6 month later.

Cardiovascular 10 year risk from unwanted events was statistically reduces during the 6 months of primary prevention implementation..

Satisfactory results over the period of 6 months of primary prevention implementation were primarily result of consistency in behavior and strong motivation of the patient with wholehearted support of health workers during this difficult process. Individual approach

in implementation of primary prevention measures is possible with a small group of patients, but hardly applicable for general population.

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Is Platelet Decline a Predictor of Poor Outcome in Severely Burnt Patients? A 5 Year Retrospective Study

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Abstract- Background: Thrombocytopenia is common among intensive care unit (ICU) patients. The percentage decline in platelet count (PPD) rather than the absolute count has been shown to be a predictor of mortality.

Purpose: To determine if changes in platelet count after a severe burn injury can be used as a predictor of outcome.

Material & methods: This is a retrospective descriptive study of patients admitted to the Burns ICU between the 1st January 2009 and 31st December 2013. The study included demographic, hematological (platelet count) and microbiological data of patients.

Keywords: burns, ICU, adults, platelet decline, thrombocytopenia.

GJMR-I Classification: NLMC Code: WO 600



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Is Platelet Decline a Predictor of Poor Outcome in Severely Burnt Patients? A 5 Year Retrospective Study

Bahemia IA^α, Muganza A^σ, Moore R^ρ & Patel M^ω

Electronic word count: 2841

Abbreviations: ICU, intensive care unit; PPD, percentage platelet decline; OR, odds ratio; APACHE-II, Acute Physiology And Chronic Health Evaluation II score; ROC, receiver operating characteristic; TBSA, total body surface area burn percentage.

Abstract- Background: Thrombocytopenia is common among intensive care unit (ICU) patients. The percentage decline in platelet count (PPD) rather than the absolute count has been shown to be a predictor of mortality.

Purpose: To determine if changes in platelet count after a severe burn injury can be used as a predictor of outcome.

Material & methods: This is a retrospective descriptive study of patients admitted to the Burns ICU between the 1st January 2009 and 31st December 2013. The study included demographic, hematological (platelet count) and microbiological data of patients. The PPD was calculated as follows: $100 - [(platelet\ count\ on\ day\ X / platelet\ count\ on\ admission) \times 100]$.

Results: Three hundred and fifty patients were included. The mean total body surface area burn percentage (TBSA) was 29.6%. The majority of patients suffered from flame burns. Overall mortality rate was 43.1%. The nadir in platelet count was on day 3 or day 4. PPD on day 3 (PPD3) >40% and any PPD on day 10 (PPD10) were predictors of mortality with odds ratios of 3.0 and 7.7 respectively.

Conclusion: A PPD3 > 40% and any PPD10 are predictors of increased risk of mortality.

Keywords: burns, ICU, adults, platelet decline, thrombocytopenia.

I. INTRODUCTION

It is well established that thrombocytopenia is common among intensive care unit (ICU) patients, irrespective of the disease process necessitating ICU admission [1-4]. Of significance, is the increased duration of stay, morbidity and mortality associated with thrombocytopenia [5-7]. While some patients are admitted to the ICU with thrombocytopenia, due to their critical illness, others will develop thrombocytopenia during their ICU stay. In the latter group of patients, this

drop in platelet count has been postulated to be a prognostic indicator of sepsis [8]. The percentage decline rather than the absolute platelet counts has been shown to be a significant predictor of mortality [5]. The mechanism causing thrombocytopenia in septic patients is thought to be due to one or more of the following: bone marrow suppression (due to septicemia or hemophagocytosis), increased peripheral consumption and destruction or sequestration of platelets in the spleen [9-10].

In addition to sepsis, drugs (e.g. heparin) and intravascular devices (e.g. central venous catheters), both commonly used in ICU patients, have also been identified as common risk factors [11]. A recent study by Akinosoglou et al. talks about the future use of antiplatelet agents to address thrombocytopenia in septic ICU patients [12]. However, it is the cause of the thrombocytopenia rather than the thrombocytopenia itself that should be focused on. Vander schueren et al. suggested that thrombocytopenia is a risk marker rather than a cause of mortality [1].

Minimal research focusing on platelet count changes in the burn patient have been conducted. In 1944, Macdonald et al. first documented a significant drop in platelet count in patients with burn injuries [13]. The predominant cause is the activation of the coagulation cascade both locally, at the burn wound site, and, distally in organs such as the kidneys and lungs [9]. This leads to the formation of microthrombi, which cause consumption of platelets [9]. The nadir of the platelet count is expected to be between day 3 and day 4 post burn injury [9,14-15]. Thrombocytosis following a period of thrombocytopenia is a commonly observed phenomenon which is thought to be due to either a reactive response to the burn injury or a rebound effect of the bone marrow secondary to increased platelet destruction and consumption [14-16]. By day 10 to day 14, platelet counts are expected to have at least normalized [9,15-16]. The extent of the burn injury may also influence both the early development of thrombocytopenia, along with, a less marked subsequent rebound thrombocytosis according to a recent study of pediatric burn patients [17].

The burn patient differs markedly from the general ICU patient in that routinely accepted markers of sepsis such as inflammatory markers and rising

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temperature are often already raised due to the burn injury itself [18]. The difference is so marked that the American Burn Association felt the need for a modified definition of sepsis for the burn patient [18]. If these raised parameters are assumed to be due to sepsis, inadequate use of antibiotics is a potential pitfall. Therefore, if the hypothesis that percentage of platelet decline (PPD) predicts poor outcome is correct, this marker will initiate early action to identify the causative factor for the thrombocytopenia. If PPD is an early indicator of sepsis, blood cultures can be taken promptly and empiric antimicrobials commenced. This is in keeping with the latest surviving sepsis guidelines [19]. Reducing the time to diagnosis of severe sepsis is thought to significantly reduce mortality from sepsis-related multiple organ failure [20].

a) Aim

The aim of this study was to determine if changes in platelet count after a severe burn injury could be used as a predictor of increased risk of mortality.

II. MATERIAL AND METHODS

a) Study setting

The Chris Hani Baragwanath Academic Hospital (CHBAH) Adult Burns Unit (ABU) is a specialist burns unit that receives patients mainly from the Gauteng province of South Africa (population size: 12.2 million) [21]. The burns unit is divided into a 4 bed ICU section and a burns ward consisting of 20 beds. The unit is run by surgeons. General surgeons in training, plastic surgeons in training and surgical interns rotate through the unit on a 4-6 monthly basis under the strict supervision of two specialist burns surgeons. On a weekly basis, an intensivist from the hospital's main ICU will review all patients in the ABU ICU and advise on necessary changes in management.

The unit admits about 200 patients per year. Mortality rate is about 25%. Accidental burns accounts for about 75% of admissions; the remaining cases are often secondary to assault, arson and acid splashes. On average, the total percentage body surface area burnt (TBSA) of patients admitted to the unit ranges between 1 and 59% (unpublished data: personal communication). Most burn injuries above 60% are fatal in our setting. The nurse-patient ratio for the ICU section is kept strictly at 1:1. Each patient is nursed in a separate cubicle. The criteria for admission to the ICU are: TBSA over 20% and/or presence of inhalational injuries. Infection control measures are adhered to, including hand washing prior to entering the cubicles and on leaving the cubicles. Procedures such as daily bathing, dressing changes and line insertions are performed under aseptic techniques. However, there is no written infection control policy specific to the burns unit. The burns ward consists of 5 cubicles, each comprising 4 beds with a nurse-patient ratio of 1:4. These patients

are relatively more stable, have less severe burn injuries and require a lower level of care. In contrast to the ICU patients, these patients have their dressings changed in two dedicated dressing rooms.

b) Study design

This is a retrospective descriptive study analyzing demographic, hematological (platelet count) and microbiological data of adult patients admitted to the CHBAHABU ICU in Johannesburg, South Africa between the 1st January of 2009 and the 31st December 2013.

The following categories of patients were excluded: (1) patients stepped up from the general burns ward to ICU during their admission, (2) patients that died within 2 weeks of admission, including patients that died within 24 hours of admission, (3) patients whose data were not accessible or incomplete due to clerical errors and, (4) patients with thrombocytopenia on admission. Ethical clearance was obtained from the Ethics Committee of the University of Witwatersrand (study number: M140391). The following information on patients admitted to ICU were collected from the admissions register of the unit: age, gender, length of stay, death post admission (number of days post admission after which the patient died), Total Body Surface Area burn percentage (TBSA), mechanism of burn. The National Health Laboratory Service (NHLS) database was accessed using the patient's hospital number to obtain the platelet counts for the first fourteen days of admission. The date of any positive microbiological culture results was collected. Platelet decline was calculated as a percentage of the admission platelet count. No clinical records such as hospital files or ICU charts were reviewed. This study only looked at results that could be retrieved from the laboratory database.

c) Statistical analysis

Data is presented as numbers, percentages, mean (+/- SD), median (25th and 75th quartiles) as appropriate. Continuous data was compared using the t-test if normally distributed or the Mann-Whitney test if not normally distributed. Comparison of categorical data was performed using the Chi-square test. Receiver Operating Characteristic (ROC) curves were constructed. All statistical tests were 2-tailed, and p values < 0.05 were considered significant. Statistical calculations were performed using Microsoft Excel for Mac 2011, Addinsoft XLSTAT Version 2014.4.06 and IBM SPSS Statistics Version 20, release 20.0.0.

The Percentage of Platelet decline (PPD) was calculated as follows: $100 - \left[\frac{\text{platelet count on day X}}{\text{platelet count on admission}} \times 100 \right]$. Thrombocytopenia (clinical thrombocytopenia) was defined as a platelet count < $100 \times 10^9/l$. Day 0 was

defined as the day of the burn injury and the day of admission.

III. RESULTS

In this study, a total of 388 patients were admitted to the adult burns ICU in the 5-year period. Of these, 350 were included. The remaining 38 were excluded based on the criteria mentioned previously. The study group consisted predominantly of adult patients between 18 and 49 years of age with a greater proportion being males (61.1%; male: female ratio). Mortality was significantly higher among the group with a higher TBSA ($p < 0.05$). Sepsis, on the other hand, was of similar occurrence among survivors and non-survivors. Table 1 illustrates the basic demographic data of the study population along with univariate analysis.



Table 1 : Demographic data

	Total number	Non-Survivors	Survivors	Deaths >50 days	Bacteremia during admission	%TBSA			Age		
						<15	15-29	>29	<18	18-49	>49
Gender	350	151 (43.1%)	199 (56.9%)	20 (5.7%)	184 (52.3%)	47 (13.4%)	133 (38%)	170 (48.6%)	21 (6%)	270 (77.1%)	59 (16.9%)
Male	214 (61.1%)	74 (49%)	140 (70.4%)	10 (50%)	104 (56.5%)	29 (13.6%)	87 (40.7%)	98 (45.8%)	14 (66.7%)	166 (61.5%)	34 (57.6%)
Female	136 (38.9%)	77 (51%)	59 (29.6%)	10 (50%)	80 (43.5%)	18 (13.2%)	46 (33.8%)	72 (52.9%)	7 (33.3%)	104 (38.5%)	25 (42.4%)
Age	*										
Mean ± SD	35.1 ± 14.1	39.4 ± 15.4	31.8 ± 12.0								
<18	21 (6%)	5 (3.3%)	16 (8%)	1 (5%)	12 (6.5%)						
18-49	270 (77.1%)	107 (70.9%)	163 (81.9%)	16 (80%)	139 (75.5%)						
>49	59 (16.9%)	39 (25.8%)	20 (10.1%)	3 (15%)	33 (17.9%)						
TBSA	**										
Mean ± SD	29.60% ± 15.5%	38% ± 15.9%	23% ± 11.7%								
<15	47 (13.4%)	8 (5.3%)	39 (20%)	1 (5%)	15 (8.1%)						
15-29	133 (38%)	30 (19.9%)	103 (51.8%)	7 (35%)	68 (37%)						
>29	170 (48.6%)	113 (74.8%)	57 (28.6%)	12 (60%)	101 (54.9%)						
Bacteremia	184 (52.3%)	89 (58.9%)	95 (47.7%)	16 (80%)							
Type of Burns											
Flame	272 (77%)	126 (83.4%)	146 (73.4%)								
Water	23 (6.6%)	11 (7.3%)	12 (6%)								
Oil	11 (3.1%)	3 (2%)	8 (4%)								
Electricity	15 (4.3%)	1 (0.7%)	14 (7%)								
Unclassified	29 (8.3%)	10 (6.6%)	19 (9.6%)								
*	There was a statistically significant difference in age groups between survivors and non-survivors, p < 0.05, chi-square test.										
**	There was a statistically significant difference in TBSA between survivors and non-survivors, p < 0.05, student t-test.										

a) Absolute Platelet Counts and Trend

Following the burn injury, a drop of platelet count was observed followed by a rebound. The nadir in platelet count was on day 3 and by day 10 most survivors had normal platelet counts. The trend of

platelets following admission is shown in Figure 1. The difference in platelet counts on admission and on day 3 post admission between non-survivors and survivors is illustrated in Table 2. The difference was statistically significant on day 3 but not on admission.

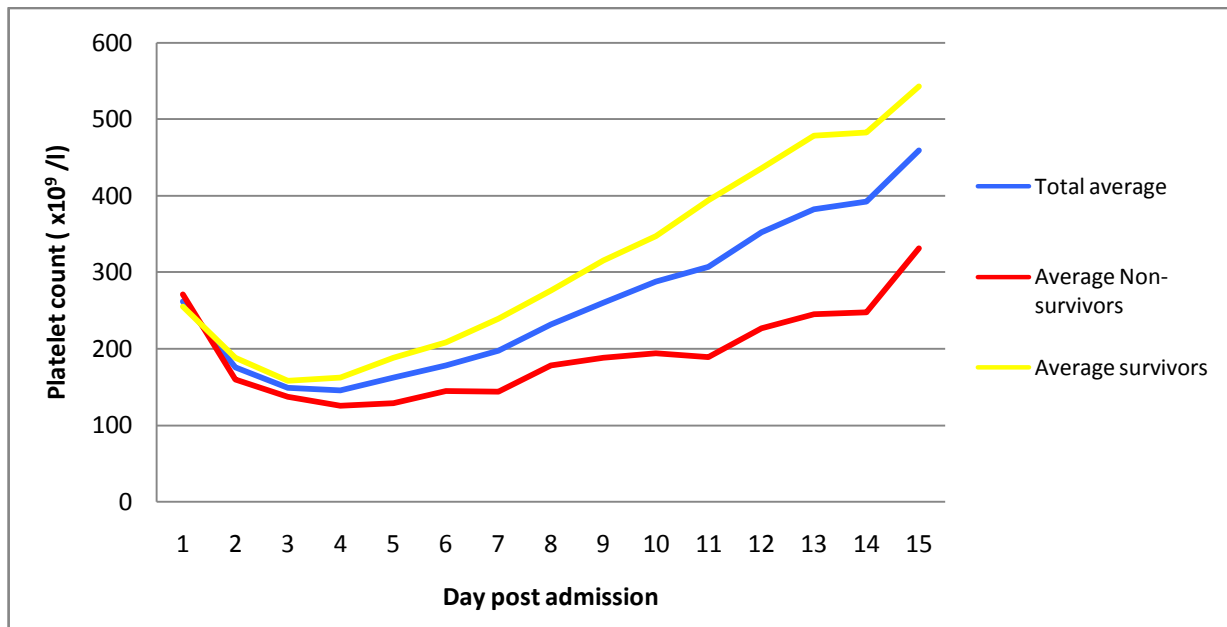


Figure 1: Trend of platelets – Platelet count vs. Day post admission. (The blue line depicts the average trend of platelet count for all patients included in the study. (n=350), the red line refers to the average trend of platelets among non-survivors only (n=151) and the yellow line shows the change in platelet count for survivors (n=199))

Table 2: Platelet counts (x10⁹/l)

Table 2: Platelet counts (x10 ⁹ /l)				
	Admission		Day 3	
	Non-Survivors	Survivors	Non-Survivors	Survivors
Median	271.3	255.1	118.5	147
1 st quartile	183.3	181.3	74.7	105
3 rd quartile	316.5	292.3	152	199
p-value (Mann-Whitney ^a , t-test ^b)	0.35 ^a		<0.001 ^b	

b) Percentage Platelet Decline (ppd)

The PPD was then calculated on day 3 and day 10 post admission. Since not all patients had platelet counts on day 0, day 3 and day 10, the sample size for analysis of platelet decline was much lower than 350. 182 patients had counts on both day 0 and 3 allowing for an evaluation of their platelet decline. Table 3 illustrates the statistical difference between the PPD on day 3 (PPD3) and day 10 (PPD10), between survivors and non-survivors.

Table 3 : Percentage platelet decline

	PPD3		PPD10	
	Survivors	Non- Survivors	Survivors	Non-Survivors
Median	37%	53.8%	30.9%	-38.9%
1st Quartile	10.7%	34.1%	-8.7%	-105.9%
3rd Quartile	54.7%	65.4%	59.5%	-5.4%
p-value (Mann-Whitney test)	<0.01		<0.01	

c) Percentage Platelet Decline on Day 3 (ppd3)

Comparing the distributions of PPD3 for non-survivors against survivors using the Mann-Whitney test showed a statistical difference with a p-value = 0.000096. The Mann-Whitney test was used because the two distributions were not normally distributed. Using the cut-off of PPD3 > 40%, the following 4 categories were analyzed, non-survivors with PPD3 >

40%, non-survivors with PPD3 < 40%, survivors with PPD3 > 40%, survivors with PPD3 < 40%.

The odds ratio of non-survival with a PPD3 > 40% was calculated to be 3.01 (95% C.I.: 11.6-5.6), sensitivity: 73%, specificity: 53%, positive predictive value: 56%, negative predictive value: 70%. A Receiver Operating Characteristic (ROC) curve for PPD3 is illustrated in figure 2.

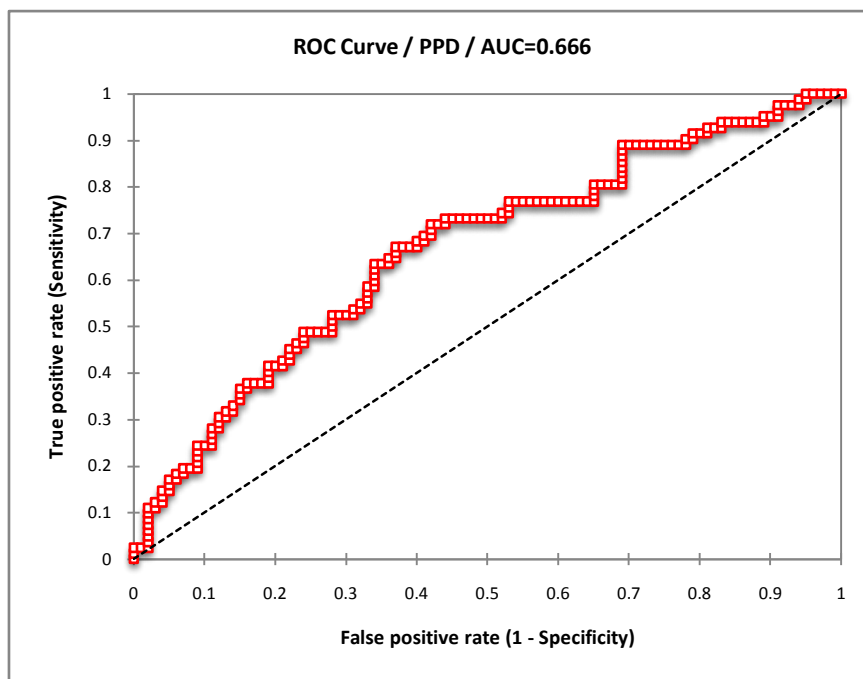


Figure 2: Receiver Operating Characteristic (ROC) curve for PPD3

PPD3 was then analysed against sepsis but was not found to be a predictor, odds ratio:0.45.

d) Percentage Platelet Decline on day 10

By day 10 post admission, platelet counts are expected to have normalized. Therefore, PPD is expected to be negative, because it would in fact be a gain. Using the cut-off of PPD of 0%, a Mann-Whitney test revealed a statistical significance (p-value < 0.05) between non-survivors and survivors. The odds ratio of non-survival if PPD10 is more than 0% (any decline) was 7.73 (95% CI: 0.20-0.38), sensitivity: 65.9%, specificity:

80%, positive predictive value: 70.3%, negative predictive value: 76.2%. A ROC curve for PPD10 is illustrated in figure 3. PPD10 was then analysed against sepsis but was not found to be a predictor, odds ratio:0.96.

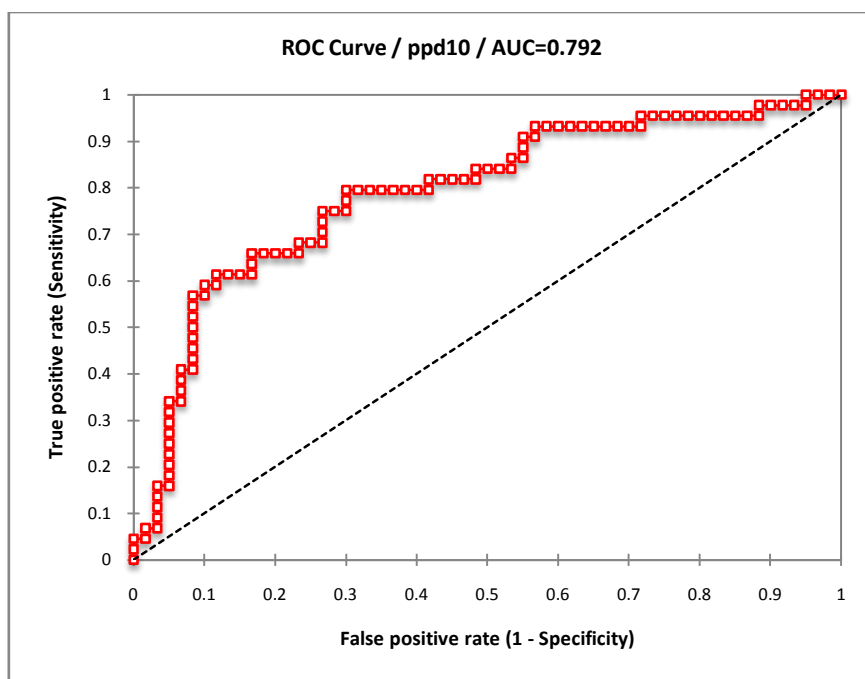


Figure 3 : Receiver Operating Characteristic (ROC) curve for PPD10

IV. DISCUSSION

This study has re-emphasized several known facts regarding severe burn injuries. Higher TBSA and increasing age were shown to be statistically significantly associated with increased mortality. Admissions platelet counts were normal in most patients and there was no statistical difference between the non-survivors and survivors in contrast to a study done by Fenget al. [22]. Taking into account that burn injuries cause a marked reduction in platelets, we hypothesize that these normal admission values could in fact be falsely reassuring and actually be secondary to post burn hemoconcentration. In accordance with the literature, the trend of platelets was seen to be an initial steady drop in all patients with the nadir of the platelet count being between the third and fourth day post admission [9,14-15]. Of note, non-survivors exhibited a more pronounced decline in platelets.

Several mechanisms have been postulated to explain the observed thrombocytopenia. The activation of the coagulation cascade both locally, at the burn wound site, and, distally in organs such as the kidneys and lungs is one of the most favored concept [9]. This leads to the formation of multiple micro-thrombi, which causes consumption of platelets [9]. Another possible contributing factor is the dilutional effect of resuscitation fluids that often follows the period of post burn hemoconcentration. The dilutional effect of intravenous fluids would then cause an iatrogenic thrombocytopenia. However, conflicting with this theory is the fact that the thrombocytopenia seems to persist even after withdrawal of intravenous fluids [23].

In this study, the platelet counts of non-survivors were consistently below the counts of survivors post admission. Percentage platelet decline was used instead of absolute counts because it has previously been shown to be a better prognostic marker, as well as it removes baseline inter-individual differences [22]. In contrast to absolute counts, using the platelet decline also offers a more dynamic measure. In comparison to the APACHE II score, which can only be calculated on admission, the percentage platelet decline allows for daily re-calculations and therefore is thought to be a better marker of progression. Integrating PPD into other scoring systems could improve accuracy. Furthermore, the APACHE II score has not been validated in burn patients.

To our knowledge, a cut off of 40% has never been used before. In keeping with two other studies, this study showed that PPD is a predictor of mortality despite using different cut off values. The results show that a PPD3 > 40% is an early marker of poor prognosis with an odds ratio of 3.0 but is not a predictor of sepsis (OR: 0.45). Despite being both a known cause of thrombocytopenia and a marker of poor outcome, sepsis in the burnt patients usually occurs several days after the nadir of platelet counts (day 3).

We postulate that a high PPD could be a marker of severity of the burn injury. A high PPD3 should alert clinicians to re-assess their patient. Even though TBSA and PPD were not compared in this study, there might be an association between these two variables. We suggest going back to the history to look for missed comorbidities and re-examining the patient from head to toe for missed injuries. Of prime importance would be a

re-calculation of the TBSA. The PPD10 is another useful predictor of mortality, albeit, only obtainable at a later stage. By day 10, platelet counts should have normalized. The results of this study show that PPD 10 has higher statistical power than PPD3, with an odds ratio of 7.7 and higher specificity for mortality, but again, is not an indicator of sepsis.

There are several limitations to this study. The study design is retrospective in nature, and as such it limits the amount of information obtainable regarding patients. This study was a review of information obtainable from the laboratory database only; patient records and ICU charts were not reviewed. As a result, this introduces a serious limitation, which is the inability to analyze some important variables that could have affected platelet counts. These are: (1) transfusion of blood components (red cell concentrate, platelets, fresh frozen plasma), (2) medication given to patients, heparin, morphine, silver sulphadiazine and paracetamol are some of many drugs known to cause thrombocytopenia, (3) pre-existing co-morbidities such as HIV positivity, chronic renal disease and liver disease, (4) volume of intravenous fluids, and (5) surgical procedure performed. It is, however, unlikely that survivors received a different management to non-survivors.

Lastly, multivariate logistic regressions were not performed.

V. CONCLUSION

Higher TBSA and increasing age are predictors of poor outcome in burn patients. This study suggests that a PPD3 of more than 40% and any value for PPD10 are also predictors of increased risk of mortality with an odds ratio of 3.0 and 7.7 respectively. A high PPD3 should prompt a re-evaluation of the patient. There is scope for a prospective study to evaluate the prognostic value of PPD with special attention to all possible variables that may affect platelet counts.

Conflicts of interest:

The authors report no conflict of interest.

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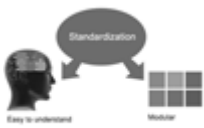
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30. Think and then print: When you will go to print your paper, notice that tables are not be split, headings are not detached from their descriptions, and page sequence is maintained.

31. Adding unnecessary information: Do not add unnecessary information, like, I have used MS Excel to draw graph. Do not add irrelevant and inappropriate material. These all will create superfluous. Foreign terminology and phrases are not apropos. One should NEVER take a broad view. Analogy in script is like feathers on a snake. Not at all use a large word when a very small one would be sufficient. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Amplification is a billion times of inferior quality than sarcasm.

32. Never oversimplify everything: To add material in your research paper, never go for oversimplification. This will definitely irritate the evaluator. Be more or less specific. Also too, by no means, ever use rhythmic redundancies. Contractions aren't essential and shouldn't be there used. Comparisons are as terrible as clichés. Give up ampersands and abbreviations, and so on. Remove commas, that are, not necessary. Parenthetical words however should be together with this in commas. Understatement is all the time the complete best way to put onward earth-shaking thoughts. Give a detailed literary review.

33. Report concluded results: Use concluded results. From raw data, filter the results and then conclude your studies based on measurements and observations taken. Significant figures and appropriate number of decimal places should be used. Parenthetical remarks are prohibitive. Proofread carefully at final stage. In the end give outline to your arguments. Spot out perspectives of further study of this subject. Justify your conclusion by at the bottom of them with sufficient justifications and examples.

34. After 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 through which your research is going to be in print to 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 in 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 criterion for grading the final paper by peer-reviewers.

Final Points:

A purpose of organizing a research paper is to let people to interpret your effort selectively. The journal requires the following sections, submitted in the order listed, each section to start on a new page.

The introduction will be compiled from reference matter and will reflect the design processes or outline of basis that direct you to make study. As you will carry out the process of study, the method and process section will be constructed as like that. The result segment will show related statistics in nearly sequential order and will direct the reviewers next to the similar intellectual paths throughout the data that you took to carry out your study. The discussion section will provide understanding of the data and projections as to the implication of the results. The use of good quality references all through the paper will give the effort trustworthiness by representing an alertness of 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 the 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

Mistakes to evade

- Insertion a title at the foot of a page with the subsequent text on the next page
- Separating a table/chart or figure - impound each figure/table to a single page
- Submitting a manuscript with pages out of sequence

In every sections of your document

- Use standard writing style including articles ("a", "the," etc.)
- Keep on paying attention on the research topic of the paper
- Use paragraphs to split each significant point (excluding for the abstract)
- Align the primary line of each section
- Present your points in sound order
- Use present tense to report well accepted
- Use past tense to describe specific results
- Shun familiar wording, don't address the reviewer directly, and don't use slang, slang language, or superlatives
- Shun use of extra pictures - include only those figures essential to presenting results

Title Page:

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



Abstract:

The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript-- must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing 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 approach 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. Yet, use comprehensive sentences and do not let go readability for brevity. You can maintain it succinct by phrasing sentences so that they provide more than 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 maintain the initial two items to no more than one ruling each.

- Reason of the study - 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 quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

Approach:

- Single section, and succinct
- As an outline of job done, it is always written in past tense
- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results - bound background information to a verdict or two, if completely necessary
- What you account in an abstract must be regular with what you reported in the manuscript
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- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled 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 with every section. If you make the four points listed above, you will need a least of four paragraphs.



- Present surroundings information only as desirable in order hold up a situation. The reviewer does not desire to read the whole thing you know about a topic.
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This part is supposed to be the easiest to carve if you have good skills. A sound written Procedures segment allows a capable scientist to replacement 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 for the least amount of information that would permit another capable scientist to spare 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 object, mention the specific item describing a way but draw the basic principle while stating the situation. The purpose is to text 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:

- Explain materials individually only if the study is so complex that it saves liberty this way.
- Embrace particular materials, and any tools or provisions that are not frequently found in laboratories.
- Do not take in frequently found.
- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

Methods:

- Report the method (not 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 - details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

Approach:

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
- Use standard style in this and in 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.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part a 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. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently. You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.



Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise 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 in manuscript form.

What to stay away from

- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
- Not at all, take in raw data or intermediate calculations in a research manuscript.
- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

Approach

- As forever, use past tense when you submit to 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 part.

Figures and tables

- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
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- In spite of position, each table must be titled, numbered one after the other and complete with heading
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- Make a decision if each premise is supported, 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 the experiment might be personalized to accomplish a new idea.
- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One 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 available information
- Submit to work done by specific persons (including you) in past tense.
- Submit to generally acknowledged facts and main beliefs in present tense.



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<i>Introduction</i>	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
<i>Methods and Procedures</i>	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
<i>Result</i>	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
<i>Discussion</i>	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
<i>References</i>	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring



INDEX

C

cardioplegic · 16
Cardiovascular · 11, 16, 17, 19, 20, 22, 25
coexisting · 1, 11, 12, 14, 15, 19

D

Dellborg · 13
Dlugosz · 24, 25

E

echocardiogram, · 12

H

Haemopneumothorax · 7, 8

O

Oestrogens · 3

P

prostatism · 3

R

reboundthrombocytosis · 27

S

Swedberg, · 13

T

themunderwentcathe · 12
Thoracotomy · 9
thrombocytopenia · 27, 28, 33, 34

Z

Zavitsanos · 4



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