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EMERGENCY SURGERY AND HYPERTENSION: ANAESTHETIC IMPLICATIONS FOR SAFE CLINICAL PRACTICE

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Abstract:

Background: Hypertension is a medical condition that may co-exist with any surgical disease. Hypertension is defined as a sustained increase in blood pressure (BP) >140/90 mm Hg in a patient not taking antihypertensive drugs. It has been estimated that the overall prevalence of hypertension in Nigeria is 28.9%. Hypertension becomes a challenge to the anaesthetist when the hypertensive patient presents for an emergency operation.

Methodology: This study was a retrospective audit review of anaesthetic charts, case notes and operation records of adult patients that were operated at the accident and emergency (A&E) theatre of a tertiary hospital in the North-West zone of Nigeria over a 6 months period during 2014. Patient's age, sex, type of surgery and anaesthetic technique were collated. Data obtained were expressed as numbers and percentages.

Results: A total of 182 adult patients had emergency surgery. Females were 95(52.2%). General surgery had the highest number (38.5%) of patients followed by Obstetrics with 32.4%. Gynaecological surgery had the lowest number of patients (5.5%). Forty (22%) of patients operated during the period had high blood pressure (>140/90mmHg). Twelve of the hypertensive patients (30%) had urological operations followed by general surgical procedures with 11 patients (27.5%). Four patients (10%) had gynaecological surgery. General anaesthesia (GA) was administered in 80% of the cases while the remaining 8 patients had spinal anaesthesia.

Conclusion: Twenty two percent of study patients were hypertensive and most of them had urological or general surgical procedures. GA was the preferred technique of anaesthesia during the review period.

Keywords: Anaesthesia, Emergency, Hypertension, Surgical patient.

INTRODUCTION

Hypertension is a medical condition that may co-exist with any surgical disease. The 2017 American College of Cardiology/American Heart Association (ACC/AHA) guidelines defined hypertension by two levels: 1. Elevated blood pressure (BP) with a systolic pressure (SBP) between 120 and 129 mm Hg and diastolic pressure (DBP) less than 80 mm Hg, and 2. Stage 1 hypertension, with an SBP of 130 to 139 mm Hg or a DBP of 80 to 89 mm Hg.[1]

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Hypertension is also described as a sustained increase in blood pressure (BP) >140/90 mm Hg in a patient not taking antihypertensive drugs.[2] Adeloye and colleagues estimated that the overall prevalence of hypertension in Nigeria is 28.9%.[3] Any hypertensive patient could present with a surgical disease requiring an operation. Hypertension becomes a challenge to the anaesthetist when the hypertensive patient presents for an emergency surgical procedure. Therefore before an emergency operation it is paramount to control elevated blood pressure to avoid excessive bleeding and other complications such as myocardial infarction and stroke.

Uncontrolled hypertension constitutes a high risk to anaesthesia and surgery. Peri-operative hypotension is common in hypertensives and this increases the risk of complications.[4] A study by Monk et al.[5] documented that intra-operative hypotension but not hypertension is associated with a higher mortality in hypertensive patients undergoing non-cardiac surgery.

Planning of the surgical procedure to a more suitable and safe time is the option of choice in the uncontrolled hypertensive patient presenting for elective surgery. This allows for time to adequately treat and prepare the patient for the conduct of safe anaesthesia.

Such time is not available in an emergency and the anaesthetist is faced with the challenge of coming-up with a suitable technique to anaesthetize the patient. We aim to determine the number of emergency hypertensive surgical patients presenting in our healthcare facility. This will assist us to train and re-train ourselves and the younger ones to look out for high blood pressure during the preoperative assessment of patients and administer the appropriate anaesthetic technique and medications to improve patient outcome.

METHODOLOGY

This study was a retrospective audit review of anaesthetic charts, case notes and operation records of patients that were operated at the accident and emergency (A&E) theatre of a tertiary hospital in the North-West region of Nigeria over a 6 months period in the year 2014. Patient's age, sex, type of surgery and anaesthetic technique were collated. Data obtained were expressed as numbers and percentages.

RESULTS

A total number of 182 adult patients had emergency surgery during the study period. Females constituted 95 (52.2%) of patients. General surgery had the highest number with 70 (38.5%) of patients followed by obstetric surgery which had 59

(32.4%) patients. Gynaecological surgery had the lowest number of 10 (5.5%) patients as shown in Table 1. Forty (22%) of patients operated during the period had high blood pressure (>140/90mmHg). Twelve of the hypertensive patients (30%) had urological operations followed by general surgical procedures with 11 patients (27.5%). Four patients (10%) had gynaecological surgery (Figure 1). The technique of anaesthesia used for the hypertensive patients are as shown in Figure 2.

Table 1. Distribution of 182 adult emergency surgical patients operated by sex

S/No	Surgical specialty	Male (%)	Female (%)	Total No. of patients (%)
1	General surgery	49 (70.0)	21 (30.0)	70 (38.5)
2	Obstetrics	0 (0.0)	59 (100)	59 (32.4)

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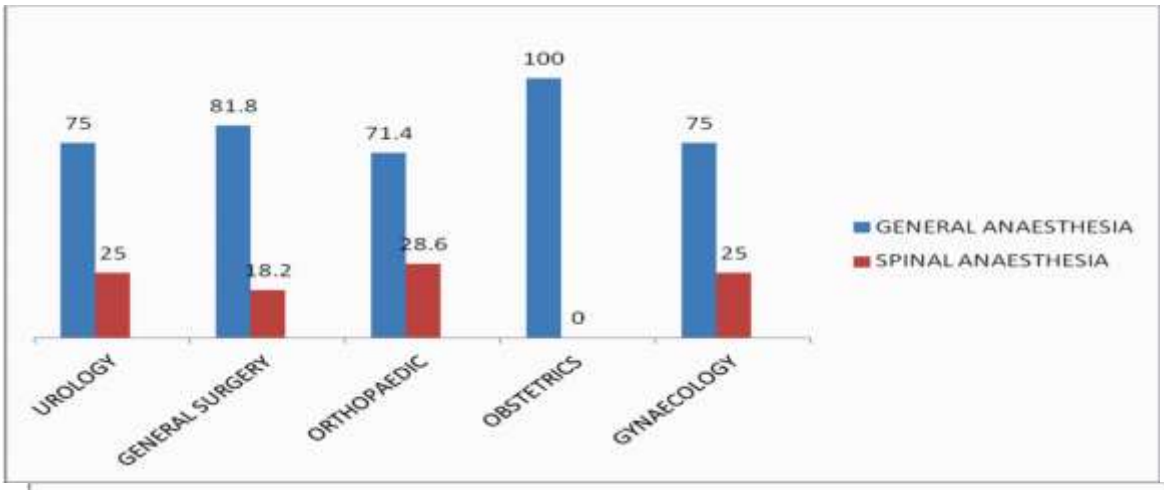
3	Orthopaedics	18 (81.8)	4 (18.2)	22 (12.1)
4	Urology	20 (95.2)	1 (4.8)	21 (1 1.5)
5	Gynaecology	0 (0.0)	10 (100.0)	10 (5.5)
	Total	**87 (47.8**	**) 95 (52.2)**	**182 (100.0)**



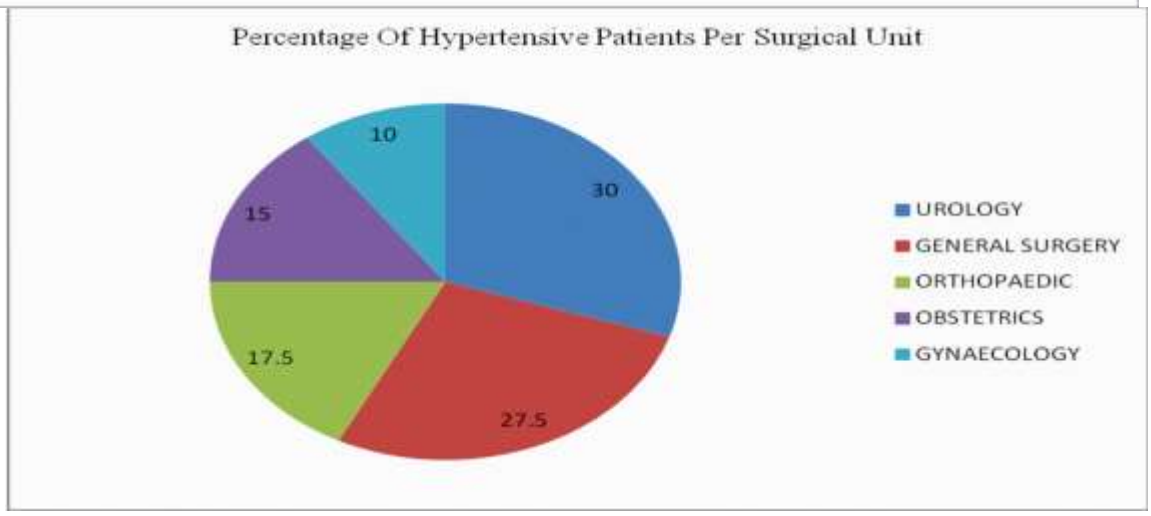


Figure 1.Distribution of 40 emergency surgical hypertensive patients operated
Figure 2.Techniquesof Anaesthesia for emergency surgical hypertensive patients

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DISCUSSION

Patients managed in our centre had either urological or general
Surgical procedures. The anaesthetist needed to be aware of this
Forty (22%) out of the 182 adult patients that had emergency because his choice of technique could be limited based on the site
Surgery during the period of the study presented with high blood of the surgery. It is also important to note that >50% (12 out of 21
Pressure (bp>140/90mmhg). This is an indication that a good patients) of all the urology patients managed during the period of
Number of our surgical patients for emergency operations do present study had high blood pressure. This may not be unconnected
With hypertension. This is also a reflection of the prevalence rate of
[3] with the fact that urological patients tend to be older and blood
Hypertension in the general community which is 29%. Studies have
[6] Pressure increases with age. The availability of various types of
Reported that blood pressure tends to increase with age. Anaesthetic drugs will help the anaesthetist to be more flexible in
Studies from developed countries have shown that the incidence of
[7] The choice of anaesthetic technique.
Preoperative hypertension is between 10%-25%. Improvement in
In this study both general and spinal anaesthesia were used for
The life expectancy among africans coupled with dwindling the management of the hypertensive surgical patients that had
Economic situations will make more hypertensive's to be seen as emergency operations. However, ga was used for most (80%)
Emergency surgical patients. This signifies more challenge to the
Of the patients. The study by mengistu and co-workers in
Anaesthetist as he prepares to manage such emergency hypertensive [8] ethiopia documented that ga was used in 62.1 % of operations.
Surgical patient. In a similar study conducted in southern ethiopia by
The anaesthetist needs to be meticulous in the choice of
Mengistu et al they documented a preoperative hypertension rate of medications for ga in the management of the hypertensive
6.9% among elective surgical patients. They stated that this is surgical patient to avoid upsurge in blood pressure. Hypertensive
Particularly lower than the rates documented in the literature. They surges greater than 20% from the baseline are associated with
Attributed the low rate to the difference in lifestyle in ethiopia [10]
[8] adverse outcomes. Care is needed in the choice of drugs for
Compared to other parts of the world. The strength of their work lies premedication, induction and maintenance of anaesthesia. There
In being prospective in nature. Is need to use cardio-stable drugs to ensure cardio protection.
Postponement of the surgical procedure to a more suitable and safe
Thus glycopyrrolate is preferred to atropine for premedication
Time is the option of choice in the uncontrolled elective hypertensive
And propofol is preferred to ketamine for induction of

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Surgical patient. This allows for time to adequately prepare the [11, 12] anaesthesia. Anaesthetic manipulations such as endotracheal
Patient for the safe conduct of anaesthesia. However, such time and intubation causes tachycardia and hypertension. This occurs as a
Luxury is not available in the emergency situation and the reflex response to intubation and increases the risk of anaesthesia
Anaesthetist is faced with the challenge of coming-up with a suitable
Especially in the hypertensive patient. These responses could be
Technique of anaesthesia for the patient. [13, 14]
Attenuated using various medications. Vecuronium and
Anaesthesia for the hypertensive patient is associated with a lot of atracurium are more cardio-stable and thus preferred for muscle
Risks. Howell et al.[9] in their work documented that there is a small relaxation than pancuronium bromide which causes tachycardia
Increase in the incidence of peri-operative major cardiovascular [15] and hypertension. During the maintenance of anaesthesia, mild
Adverse events in hypertensive patients with organ damage or with increases in blood pressure could be lowered by using
Blood pressure >180/110 mmhg but they cannot say for sure inhalational agents like halothane and potent analgesic agents
Whether postponing surgery to reduce blood pressure overcomes like
fentanyl.
This risk. These highlight the need for the anaesthetist to know how
The use of ra in the anaesthetic management of the
To adequately optimize and manage the hypertensive surgical patient hypertensive surgical patient has the advantage of avoiding the
In order to reduce morbidity and mortality. Airway. However, uncontrolled hypertensives are more at risk of
This audit showed that the emergency surgical patient presenting epidural anaesthesia compared to controlled hypertensive
With high blood pressure could be from any of the surgical subpatients and therefore need close monitoring. Marked
Specialty. However 57.5% (23 out of 40) of the hypertensive
Cardiovascular instability may accompany spinal or
Epidural
anaesthesia in the form of sudden drop in blood pressure.[16] Our hypertensive patients had good outcome due to careful choice of anaesthetic technique and medications. This study was limited by the fact that it was retrospective. There is need to conduct a prospective study to document the exact prevalence of hypertension among surgical patients in Zaria.

CONCLUSION

Twenty two percent of study patients were hypertensive and most of them had urological or general surgical procedures. GA was the preferred technique of anaesthesia during the period of review.

With precise use of medications, GA or regional anaesthesia (RA) can safely be performed in the hypertensive surgical patient undergoing an emergency operation.

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Conflicts of interest

No conflicts of interest to report.

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