

THE ROLE OF ANAESTHETIST IN THE MANAGEMENT OF PATIENTS DUE TO INSURGENCY IN THE NORTH-EASTERN NIGERIA

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ABSTRACT

Background: The roles played by the team of Anaesthetists in the management of patients due to insurgency are enormous and very vital in the survival of the patients and indeed in the reduction of the possible morbidities and mortalities due to injuries from the insurgency.

Objective: This study is aimed at giving an overview of the role of Anaesthetist in important areas of patient's management due to insurgency and to suggest ways of improvement.

Method: This is a prospective study of 1,339 patients managed for various injuries sustained due to insurgency in the University of Maiduguri Teaching Hospital, Maiduguri, Borno State, Nigeria, for the period of five years (January, 2010 and December, 2014).

Results: One thousand three and thirty nine (1,339) patients who were injured directly due to the insurgency were included in the study during the period under review. Their ages ranged from 1 month to 80 years with the mean age of 38.6 ± 18.3 years. Most of the injuries occurred among the age group 18 - 35 years. Patients were resuscitated, had anaesthesia for surgeries and also had intensive care management.

Conclusion: The roles played by the Anaesthetist are so vital in the survival of the patients due to insurgency. However, there is a need for an increase in the number of Anaesthesia manpower and for the training and re-training of these Anaesthetists in the management of mass casualties.

Keywords: Role of Anaesthetists, Management, Insurgency, injuries, North-eastern Nigeria

INTRODUCTION

Insurgency is an act perpetuated by an individual or group of people for idiosyncratic, criminal, political or religious reason. The actors are usually called terrorists¹ and the Boko Haram fall in here. This group is said to have been in existence since 1995 led by one

Mallam Lawan. In 2002, Mohammed Yusuf took over the leadership when Mallam Lawan went to continue his education. His main followers were unemployed youths. He told his followers that the Western education (Boko) was forbidden (Haram) to the extent that graduates and school leavers destroyed their

certificates. His teachings were abhorred by most Islamic teachers who later paid dearly with their lives.

The sect became violent in 2009 when they clashed with the police leading to the death of some of their members; leaving scores wounded who were treated at University of Maiduguri Teaching Hospital (UMTH). Soon thereafter, they attacked police barracks, schools and churches in Maiduguri. This last act lead government to go after them with eventual arrest of their leader who was subsequently killed and his deputy Abubakar Shekau took over the leadership, and after regrouping, it has been a war on every one that was not on their side. Their initial targets were Christians and churches, but later all non-members also, including Muslims. Everyone became terrorized.

Light weapons (AK 47, pistols) and improvised explosive devices (IEDs) ^{2, 3} were usually the weapons of choice. Knives were also used to slaughter people in their houses. Boko Haram finances itself through bank robberies, ransoms and some unknown sources. Most developed countries that went through periods of terrorism have developed protocols for the prevention of attacks and treatment of victims⁴ but this is lacking in most developing countries such as Nigeria where these acts are new. The dearth of medical expertise and well equipped health facilities to manage victims of terror attacks has made a bad situation worse.

The role played by the Anaesthetist in the management of patients due to insurgency in the Northeastern Nigeria is very vital and should not be overemphasized. Anaesthetist among others specialties, play a very vital role in the resuscitation of the patients in the accident and emergency unit, pain management, peri-operative management and in the intensive care management of patients. The Anaesthetists are able to identify and treat life-threatening injuries first during the 'primary survey', and later

proceed to a more detailed physical examination, from head to toe, using the 'secondary survey'.⁵

Surgical priorities are important elements to be remembered in the management of injured patients due to insurgency. However, Anaesthetists are expected to triage patients scheduled for emergency operations during a busy weekend call, a massive casualty incidents like insurgency or natural disaster. The Anaesthetist plays an important role in determining which procedures should rather be postponed until the patient is more stable.⁶

It is important for the Anaesthetist to be familiar with the available equipment and airway management strategies. The ability to improvise under stressful, and often rapidly changing, circumstances is required. The management of patients due to insurgency may require the participation of a multi-disciplinary team, namely a trauma surgeon, orthopaedic surgeon, neurosurgeon, plastic surgeon, vascular Surgeon, Radiologist, laboratory Technician, blood bank Technician, Intensivist and of course, the Anaesthetist, who will continue the resuscitation, already in progress, and whose role is fundamental to the final outcome of the patient. Patients due to insurgency often present as emergencies in the hospitals in the developing countries with limited human and material resources⁷ like ours.

This study provides an overview of important areas of management of patients due to insurgency for the Anaesthetist and suggests various ways to plan and handle such patients when they do occur.

METHOD

This study was carried out at the University of Maiduguri Teaching Hospital, Maiduguri; it is the only tertiary hospital in Borno state, North-eastern Nigeria. The department of Anaesthesia is in the developmental stage with one consultant, seven registrars, ten Nurse

Anaesthetists, trained Anaesthetic technicians and other supporting staff. It has five bedded ICU, well equipped and with fourteen trained ICU nurses, among other supporting staff.

Ethical clearance was obtained from the research and ethical committee of the hospital. This is a prospective study involving 1,339 patients that were injured during the insurgency. These patients were being managed at the University of Maiduguri Teaching Hospital over a period of 5 years (January, 2010 to December, 2014). Their ages ranged from 1 month - 80 years with the mean age of 38.6 ± 18.3 years. The following details were appropriately entered into a preformed forms: age, gender, occupation, presenting complaints, site of injury, first aid at the scene of attack, transportation used, patients rescuers, duration from the time of attack to presentations, type of resuscitations, outcome of resuscitations, diagnosis, types of surgical and anaesthetic interventions, duration of hospital stay, psychotherapy, rehabilitation, outcome of

treatment and complications associated with the injuries. All patients were monitored from the time of presentation to the hospital to discharged or otherwise. Data were recorded and analyzed using SPSS version 11.0 (Statistical Package for Social Sciences) Inc. Standard, 2001. The results were presented as frequency, percentages and Chi squares. A $p < 0.05$ was considered statistically significant.

RESULTS

One thousand three hundred and thirty nine (1,339) patients injured due to insurgency were managed during the period under review. Their ages ranged from 1 month - 80 years with the mean age of 38.6 ± 18.3 years. Most of the injuries occurred among the age group 18-35 years ($p = 0.00$). There were more males 1223 (91.3%), than females 116 (8.7%); ($\chi^2 = 199.0$ $p = 0.00$) with M: F of 11:1. Majority of the injured patients were among the business people occurring in 418 (31.22%) while the least injuries occurred among the civil servant; 124 (9.27%) as shown in the table 1.

Table 1: Socio-demographic characteristics of the study population

Age (years)	frequency	Per cent	p-value
0-17	406	30.32	
18-35	643	48.02	0.00
36-80	290	21.66	
Sex			
Male	1223	91.34	
Female	116	8.66	0.00
Occupation			
Business people	418	31.22	
Students	228	17.03	0.57
Security	236	17.63	0.00
Unemployed	333	24.87	0.00
Civil servants	124	9.27	0.00
Total	1339	100.00	

Eight hundred and twenty three (72.1%) of these patients were transported by Taxi or personal public vehicles. The patients were rescued and transported to the hospital by the security operatives who made of 432 (25.9%) patients. Majority of the patients 87 (59.2%) arrived the hospital's Accident and Emergency department within one hour of incidence. Thirty six (0.7%) patients had ambulance service as shown in Table 2.

Table 2: Shows the means of transportation of the patients from scene to the hospital

Means of transportation	Frequency	Per cent
Public vehicle	823	72.1
JTF	432	25.9
Foot	48	1.4
Ambulance	36	0.7
Total	1339	100.0

Key: JTF - Joint Task Force

Only 82 (6.1%) patients had first aid intervention at the scene of the injuries, whereas majority 1,257 (93.9%) of the patients had no first aid intervention. The first aid treatment included: intravenous fluids, broad spectrum antibiotics, tetanus prophylaxis, debridement of the wound and analgesics. The definitive treatment ranges from laparotomy, amputations to thoracotomy depending on the diagnosis made as shown in table 3.

Table 3: Shows the sites of injuries and first Aids interventions to the patients.

	Injuries Antibiotics. n (%)	Fluids mgt. n (%)	Blood transfusion n (%)	O ₂ Therapy n (%)
Polytrauma	616 (46.0)	412(52.6)	484(47.7)	616(46.3)
Head and neck	141(10.5)	78(10.0)	67(06.6)	138(10.4)
Chest	224(16.7)	128(16.3)	204(20.1)	218(16.4)
Abdomen	158(11.8)	86(11.0)	138(13.6)	158(11.9)
Limbs	146(10.0)	62(07.9)	86(08.5)	146(11.0)
Pelvis and perineum	54(4.10)	18(02.2)	36(03.3)	54(04.0)
Total	1339(100)	784(100)	1015(100)	1330(100)

Majority of the patients, 616 (46%) sustained multiple injuries on the body, followed by injury to the chest occurring in 224 (16.73%) patients. while abdominal injuries occurred in 158 (11.8%) patients. The occurrence of the various injuries in the different sites was not different; $\chi^2=226$, $p=0.00$ as shown in table 4.

Table 4: Various sites of injuries sustained by the victims of the insurgencies

Site of injury	Frequency	Per cent	p-value
Multiple sites	616	46.00	
Head and neck	141	10.53	0.002
Chest	224	16.73	0.00
Abdomen	158	11.80	0.00
Limbs	146	10.90	0.00
Pelvic and perineum	54	04.03	0.00
Total	1339	100.00	

The total of 1,229 (91.8%) patients had gunshot injuries with various surgical interventions which include: debridements, Bore holes, and laparatomies among other surgical interventions. The surgical interventions were done under local anaesthesia (local infiltrations) in 328 (26.7%), regional anaesthesia were done 218 (17.7%) and majority of the surgeries were done under general anaesthesia with or without relaxants, which made up 773 (62.9%) patients. However, some patients had more than one surgeries and anaesthesia. Bomb blast injuries were found to be in 90 (6.7%), knife throat cut in 4 (0.3%) and other injuries occur in 16 (11.9%) under various forms of anaesthesia.

Table 5: Shows the wards were patients are managed and the outcomes

Wards	n (%)	Survived (%)	Death (%)
MSW	674(50.3)	510(75.7)	164 (24.3)
Orthopaedic	209(15.6)	164(78.5)	45(21.5)
HDU	201(15.0)	157(78.1)	44 (21.9)
ICU	137(10.2)	91 (66.4)	46 (33.6)
FSW	118(8.8)	82(69.5)	36(30.5)
Total	1339 (100)	984 (73.5)	355 (26.5)

Key: MSW- Male surgical ward, FSW- Female surgical ward, HDU- High dependency ward, ICU- Intensive care unit.

ICU admissions and management were in 137 (10.2%) with the survival rates of 91(66.4%) of the total admissions of patients due insurgency as shown in the table 5.

DISCUSSION

Gunshot injuries are major problems worldwide from human, medical and economic perspective.^{8,9} These and blast injuries constitute the majority of patients (91.8%) being managed in our centre within the duration of this study. The finding that males are predominantly injured during insurgency like any other trauma as compared to female concurred with the findings by other researches.¹⁰

The fact that most of the patients that were involved in the insurgency attacks were business personnel, 31.22%, could be as a result that most sites of the attacks were at or near the business premises such as market, business centres, motor parks, etc followed by the unemployed people and security personnel. The finding from this study showed that majority of the patients were below 40 years of age which could have an enormous negative impact on productive times and lives in a productive work force, as also reported by others.^{11,12}

We observed that most of the patients were transported to the hospital by the security personnel which revealed that immediately after the attack made, people were afraid to go to the scene of the attack. For that reason, only the security operatives who had no knowledge of basic resuscitation could transport the injured patients to the hospital. However, majority of the patients (59.2%) arrived in our Accident and Emergency unit within one hour of the incidence.

The anaesthetic challenges in the management of trauma patients due to insurgency include: the inadequate history taken, 'full stomach', anticipated difficult airway and inadequate preparation of patients before interventions. The well-known American Society of Anesthesiologists (ASA) algorithms for the management of difficult airways in trauma

patients can be used.¹³ Once the airway has been secured (endotracheal tube position checked and the cuff inflated), the neck immobilization devices should be returned in position.¹⁴

There is no ideal anaesthetic drug for patients with haemorrhagic shock. The key to safe anaesthetic management of shock patients is to administer small incremental doses of whichever agents are selected; in our centre we resorted to the use of ketamine after the optimization of our patients during inductions. However, propofol and thiopentone may potentiate profound hypotension. Both drugs are vasodilators and both have a negative inotropic effect. Etomidate is widely used in the trauma population because of its cardiovascular stability, relative to other induction agents. However, etomidate may still produce profound hypotension due to its inhibition of catecholamines release. Another undesirable effect of etomidate is adrenocortical suppression.¹⁵ This had many trauma centres abandoning its use in the trauma setting. Ketamine is very popular for the induction in trauma patients like in our centre. However, it is also a direct myocardial depressant. In normal patients, the effects of catecholamine release mask cardiac depression and result in tachycardia and hypertension. In patients with severe haemorrhagic shock like most of our patients, the cardiac depression may be unmasked, and lead to cardiovascular collapse. There is need for adequate optimizations, meticulous management and quick interventions,¹⁵ as was done in our patients.

Anaesthetists working in high-volume trauma centres like ours should determine their own algorithm, based on available skills and resources. The surgeon must always be present during the induction, ready to perform an expeditious cricothyroidotomy.¹⁶ It is very

important for the Anaesthetists to maintain in-line immobilization for the cervical spine at all times, especially during the laryngoscopy and intubation. Failure to do so may exacerbate the spinal cord injury, with disastrous consequences.¹⁷ Therefore, Anaesthetists needs to play saves and to do no harm to the patients.

In addition, the team of Anaesthetists also played an important role in the management of pains in the accident and emergency unit and also at the perioperative period. We often use pentazocine 0.5mg/kg and fentanyl 1-3µg/kg with good outcomes.

The total of 137 (10.2%) patients were admitted and managed in our ICU within the period under review with 91 (66.7%) patients that survived and discharged out of ICU and the mortality rate of 46 (33.6%) due to various reasons which include among others the hypovolaemic shock, multiple organ dysfunction, acute respiratory syndromes, septicaemia, etc. In a study by Adamu *et al*,¹⁸

they reported the mortality rate of 13.8% in the ICU before the outbreaks of the insurgency however, with the surge of the insurgency the mortality rate increases to 33.6%. This may not be unconnected to the increase in the number of patients admitted into the ICU and also the limited human and material resources.

CONCLUSION

The role played by the Anaesthetists is so vital in the survival of the patients injured during an insurgency in the northeastern Nigeria. These, among others, include the resuscitation of the patients, delivery of anaesthesia during emergency or elective surgeries and also in the management of patients in the intensive care units. However, there is need for the increase in the number of Anaesthesia manpower and for training and re-training of these Anaesthetists in the management of mass casualties and to open well equipped trauma centre with functional standard ambulance services in this sub-region.

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