Research Article

Changing Pattern of Gunshot Injuries at Ado-Ekiti, South-western Nigeria

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Abstract

Background: Trauma and deaths from Gunshot Injury (GSI) are on the increase worldwide with increasing cost of management. This study was stimulated when six young men were brought dead to our emergency room in quick successions due to GSI in a suspected gang related and reprisal attacks. This study focused on the causes and pattern of gunshot injuries in Ado-Ekiti and compared it with a previous study done at the same centre and also suggested possible strategies to prevent these injuries.

Methods: A prospective study at a tertiary hospital between January 2018 and May 2019. Information was obtained at presentation and on discharge. Data analysis was done using SPSS version 16.

Results: 9,457 patients presented with trauma and 79 had GSI over 17 months compared to 38 GSI seen 14 years ago in a 22-month period. Seventy-two males and 3 females, M:F, 25:1 and age range of 2-57 years with mean of 36.0 ± 9.8 years. Armed robbery attack was the major cause of GSI as in previous study while new causes in this study include gang related attacks, political violence, communal clashes and injuries caused by herdsmen. Mortality, 17 (21.5%) was higher compared with 5 (13.5%) in the previous study.

Conclusion: There were more cases of GSI than the previous study with new causes like gang related attacks as observed in this study. Mortality was higher compared with previous study.

Keywords: Political violence; Injury; Gunshot injury; Trauma

Introduction

It has been observed that there is an increase in gunshot injuries worldwide due to increased gun availability and Nigeria seems not to be an exemption. In a study of trends of gunshot injuries over two decades from 1993 to 2012 in USA, more than 32,000 persons died and over 67,000 persons were injured by firearms each year. The incidence has also increased in Tanzania; recently, there is an increase in the incidence of GSI due to armed robbery attacks and violence. The injuries sustained from gunshot cause profound morbidity and significant mortality. Effects of gunshot injuries could be devastating when vital organs are involved and could result in instant death. The cost of treating patients that survive these injuries could be enormous when the injuries are to the head, chest, abdomen and the spine [1,2].

The causes of gunshot injuries in Nigeria like many other African and developing countries include communal clashes, sectarian religious crises, military violence, armed robbery, hunting, political violence, students cultism activities and rarely sporting and suicidal attempt. To the best of our knowledge, there is no known national incidence in Nigeria; the number of gunshot injuries and the fatalities encountered in our center has been noted to be on the increase [3]. This study was stimulated when six young men were brought in dead, in quick succession due to gunshot injuries in a suspected gang related and reprisal attacks. This study focused on the causes and pattern of gunshot injuries as seen in our centre over 17 months period, compare findings with previous study 12 and makes recommendations/suggestions on preventive strategies [4,5].

Materials and Methods

This was a prospective study over a 17 month period at a tertiary hospital in Ado-Ekiti, South-western Nigeria, between January 2018 and May 2019. Approval for the study was obtained from the ethics and research committee of the hospital. During the study period, after resuscitation, evaluation and stabilization of patients with gunshot injury,

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consent was obtained from the patient when stable or caregivers in case of the unstable patients and the following information were obtained at presentation: Age, gender, place and events preceding the attack, possible type of gun used and nature of injuries. On discharge, the following information were also obtained: Treatment given, surgical findings where surgery was indicated, outcome of treatment and duration of hospital stay. The data obtained was analyzed using Statistical Package for Social Sciences version 16 (SPSS Inc., Chicago, IL, USA) [6,7].

Results

There were total of 9,457 trauma patients seen during the study period and 79 cases of gunshot injury (approx. 8 gunshot injuries per 1,000 trauma patients) [8,9]. Of the gunshot injuries, there were 76 males and 3 females with M:F ratio of 25:1. The age ranged from 2-57 years with mean of 36.0 ± 9.8 years. Age-group distribution is shown in Figure 1; 21-40 years were mostly affected. Sixty cases (76%) of the shootings occurred in Ado-Ekiti, state capital, while 19 (24%) cases were in its environs [10,11].

Fifty-four (68.4%) cases of the shooting occurred between the hours of 7.01 pm-5.59 am while 25 (31.6%) cases occurred between 6.00 am and 7.00 pm. Sixty-four (81%) of these patients were admitted to the wards after resuscitation, duration of admission ranged from 1-42 days. In most cases, the type of guns used as described by the victims or their relatives was at variance with pattern of injuries found in the patients. Table 1 compares parameters of present study with previous study done 14 years ago. Table 2 shows the type of surgical intervention and outcome of care while Table 3 shows the time of death and region of the injuries [12,13].

Table 1: Comparing previous study with present study.

Parameters	Previous study	Present study
Period of study	22 months	17 months
Numbers of GSI patients	38	79
Injured below age of 40	30 (78.9%)	56 (70.9%)
Main age group injured 21-40	21 (55.3%)	52 (65.6%)
Causes and percentage		
Armed robbery	19 (50.0)	37 (46.8)
Unknown assailant	6 (15.9)	16 (20.3)
Accidental discharge	11 (28.9)	7 (8.9)
Gang related	Nil	7 (8.9)
Political violence	Nil	5 (6.3)
Herdsmen	Nil	2 (2.5)
Communal clash	Nil	2 (2.5)
Police/NDLEA	1 (2.6)	3 (3.8)
GSI during ceremonies	4 (10.5)	Nil
Parts of body injured and percentage		
Head and neck	8 (21.1)	14 (17.7)
Chest	6 (15.8)	17 (21.5)
Abdomen	6 (15.8)	11 (13.9)
Back/trunk	2 (5.3)	-
Scrotum	Nil	2 (2.5)
Limbs	31 (81.6)	44 (55.7
Mortality	5 (13.5)	17 (21.5)

Note: NB: Some patient sustained gunshot injuries in more than one region

Table 2: Type of intervention.

Type (Number of patients)	Findings	Outcome
Exploratory laparotomy (10)	Haemoperitonum 0.5 L-3 L	Two died few days post-operative. Two temporary colostomies: Transverse and sigmoid colostomy
	Damage to livers, spleens stomachs, ureters, caecums and gall bladders	Most were discharged within 14 days except one with multiple visceral injury that spent 48 days
	Multiple transfusion done in some of the patients	-
Wound exploration/debridement (39)	Extensive necrosis, bullet casings, bone fragments	Range of admission 3-30 days
Open reduction and internal fixation (2)	Humeral injuries with missing bone segment in one and radial nerve injury in the other	Range of admission was 4-10 days
Fracture of mandible and maxilla (2)	ORIF+V-Y advancement flap	10-23 days of admission
External fixation (2)	Severely comminuted fractures of the humerus	Range of admission was 21-32 days
Amputation (1)	Non salvageable popliteal vessels injury	Had above knee amputation, admitted for 10 days
Neck exploration (1)	Lacerated right internal jugular vein and common carotid artery	Died 36 hours after surgery
Left Against Medical Advice (LAMA) (5)	Injury to the limbs	Not known
Referral (3)	Bilateral brachial plexus injury, popliteal injury	Not known

Table 3: Time of death and region of the injuries.

Numbers of patients (n=17)	Time of death	Regions of injuries	Treatment and outcome
6	Brought in dead	Head, neck, upper chest, chest, back	Death confirmed and transferred to the morgue
7	Died during resuscitation	Face/head, thigh, back, scrotum and perineum, abdomen	Died within 10-30 minutes during resuscitation
4	Post-operative	Neck, chest, abdomen, face, kidney, renal vessels and mesentery, SI, LI, gall ballder, internal carotid artery and the jugular vein	Died within few hours postoperative

Note: This included a 12-year-old boy who was shot in the neck by his friend at the assailant's house, SI-Small Intestine, LI-Large Intestine

Discussion

During this 17-month study period, a total of 79 patients were seen as compared to 38 seen in a 22-month study done 14 years ago. This shows that there is an increase in gun related injuries presenting at the hospital. There might even be more gunshot injuries in the state, since some of the cases could have been referred or presented to either of the other two tertiary centers in the state. This could be due to an increase in the population, with consequent increase in social and political activities [14,15]. It could also indicate that there is increase in crime and gunshot related violence in and around the state capital. That males were predominantly injured by gunshot violence agrees with studies from other centers in Nigeria. The prevalence of gunshot injury during the study period was 8 in 1,000 trauma patients; there is no documented incidence or prevalence in the local publications reviewed [16,17]. Our study revealed that 66 (76%) of the GSI occurred within the state capital and 54 (68.4%) occurred between the hours of 7.01 pm-5.59 am. This means that people should be more security conscious at night. Fifty-six (70.9%) of the patients were below the age of 40 years, indicating loss of active productive work force resulting in indirect economic costs such as loss of productivity, loss of current and future earnings, loss of potential output and the cost of providing social services [18].

One of our patients was a 12-year-old secondary school boy who was shot by his friend in the neck causing laceration to the internal carotid and jugular vein. Though, there were more patients below the age 20 years in the previous study; 9 (23.7%) compared with 4 (5.1%) in the recent study, none of the nine patients sustained life threatening injury like the above 12 years old school boy. Gun should be kept away from the reach of the children to avoid catastrophic and fatal injuries like this. Compared to the previous study, greater proportion of patients in this study sustained intentional GSI during armed robbery attack, political activities, reprisal gang activities and communal clashes. Two cases of gunshot injuries caused by herdsmen and seven cases of gang reprisal attack were recorded in this study while none was recorded 14 years ago. This means that interpersonal violence could be on the increase in the community. This is a cause for concern; there is need for provision of effective security for the populace. Gunshot injuries could be sustained unintentionally from accidental discharges and during celebrations, or

intentionally inflicted by criminally inclined persons or during conflicts [19].

The 21.5% mortality recorded in the study was noticeably higher than the 13.5% mortality in the previous study. This increase mortality could be due to higher incidence of intentional GSI and more availability of sophisticated guns. In addition, six of the mortalities that occurred before getting to the emergency room were due to the reprisal attacks among youth gangs. These youth gang are popularly referred to as cults and is a recent phenomenon in tertiary institutions and communities. The severity of the life threatening injuries sustained in this gang related GSI was demonstrated by six (85.7%) out of seven deaths in this recent study. In the study done 14 years ago, there was no incidence of gunshot from gang attacks. This upsurge indicates a shift towards organized-type crime in our environment. It should be a wake-up call to policy makers and it indicates a need for community based social engineering and provision of recreational facilities and employment opportunities for the youths [20].

The limbs were still the most injured part of the body like the previous study, but the proportion of gunshot injuries to the head/neck, chest and abdomen have doubled and this would have contributed to the higher mortalities recorded in this study. It seems the objective of most of the assailants in the recent study was to kill their victims rather than to injure them as demonstrated by high mortality and most of the deaths were pre-hospital or during resuscitation. This is contrary to work done by Oboirien who noted that the pattern of injuries in their study would indicate that the intention of the assailants was to maim rather than kill.

Gunshot injuries to the head are challenging to manage and tend to be more frequently encountered in military settings where the intent is usually to kill, has the highest prehospital mortality and the hospital mortality is as high as 95%. In our study two (33.3%) of the 6 patients shot in the head survived, but they had multidisciplinary facial reconstruction and multiple surgeries.

Conclusion

Armed robbery attack was the major cause of GSI as in previous study while new causes include in gang related attacks. The study revealed that there were more cases of gunshot injuries than the previous study, most of the gunshot injuries occur mainly between the hours of 7 pm and 6 am and gang violence as a cause is on the increase. The limbs were still the most common site of body injury and there was higher fatality study.

Source of Support

Nil.

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None.

Conflicts of Interest

None to declare.

Author's Contribution

JDO was involved in all stages of the work. MBY, JGO, IAK, SOP, OSO and KSO were involved in study design, literature search, data analysis, manuscript preparation, manuscript editing and manuscript review. AMO was involved in data acquisition, literature search, manuscript preparation, manuscript editing and review.

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