

# Gunshot Injuries In A Nigerian Hospital

✉ J D Ogunlusi *FMCS \**, L M Oginni *FMCS, FWACS\*\**, I C Ikem *FMCS, FWACS, FICS\*\**, A A Olasinde *FWACS\*\*\**, O G Hamilton *MBBS*, A M Akinbolagbe *MBBS*, M Temitope *MBBS*

## Summary

**Background:** Gunshot injuries are major problems worldwide from the medical and economic perspectives and are associated with profound morbidity and significant mortality. Many previous studies were focused on specific sites of injury but this study was aimed at the pattern and presentation of the gunshot injuries.

**Patients and Methods:** This was a combined retrospective and prospective study of gunshot injuries in a Nigerian hospital. The medical records of patients with gunshot injuries between January and December 2004 were reviewed. Prospective data collection was done between January and October 2005.

**Results:** Total number of patients was 38 and male: female ratio was 18:1. Thirty (78.9%) were below the age of 40 years. The locally made dane gun was the instrument of attack in 24 (63.1%) and 19 (50.0%) of the patients were victims of armed robbery. The most frequently injured sites were the extremities of which the lower limb was 28 (73.7%) and the upper limb was in 10 (26.3%) patients.

**Conclusion:** It was concluded that gunshot injuries occur more below age of forty years and the limbs were more injured. Armed robbery attack contributed to about half of the attacks and injuries results mainly from locally made dane guns. It was found that pistols were usually loaded with multiple pellets thus there could be multiple entry and exit wounds in patients attacked with pistol in our environment.

**Key words:** gunshot, injuries, dane gun, hospital

## Introduction

Gunshot injuries (GSI) cause profound morbidity and significant mortality<sup>1</sup>. These injuries occur in both military and civilian settings. The causes of gunshot injuries in Nigeria like many other African and developing world include communal clashes, sectarian religious crises, military violence, armed robbery, hunting, political violence, students' cultism activities and rarely sporting and suicidal attempt<sup>2,3,4,5</sup>. Gunshot injuries (GSI) were first reported in West Africa following the Nigerian civil war of 1967-1970<sup>6</sup>. It is the second commonest cause of death per 1000 in Transkei region of South Africa<sup>7</sup>. Recently the incidence has been on the increase worldwide<sup>8</sup>. A case of loss of facial identification of a survivor after firearm injury to the head has been reported<sup>9</sup>. Gunshot injuries could be devastating especially when it involves vital organs and could result to instant death. The cost of treating patients that survive these injuries could be enormous especially when the injuries are to the head, chest, abdomen and the spine<sup>10,11,12</sup>. The aim of this study is to find the pattern of gunshot injuries in our environment.

Table 1: Age distribution of gunshot patients

Age of the patients (years)	N0. of patients n (%)
0-10	2(5.3)
11-20	7(18.4)
21-30	12(31.6)
31-40	9(23.6)
41-50	2(5.3)
51-60	2(5.3)
61-70	4(10.5)
Total	38(100)

## Patients And Methods

This is combined retrospective and prospective study of Gunshot Injuries (GSI) that presented to State Specialist Hospital Ado-Ekiti, Nigerian between January 2004 to October 2005. The medical records of patients with gunshot injuries that presented between January and December 2004

J D Ogunlusi, L M Oginni ,I C Ikem , A A Olasinde, O G Hamilton ,A M Akinbolagbe ,M Temitope  
Victoria Hospital, Castries. St Lucia. West Indies.  
\*\*College of Health Sciences, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria.  
\*\*\*FMC, Owo, Ondo State, Nigeria.  
House officers in the State Specialist Hospital Ado-Ekiti, Ekiti State, Nigeria  
Johnson Dare Ogunlusi Consultant Accident and Emergency / Orthopaedic Surgeon & Traumatologist, Victoria Hospital, Castries. St Lucia. West Indies.  
✉ gbemidare@yahoo.com  
Phone no: +17587192605, Fax no: +1758 453 0960

were reviewed. The following details about each patient were extracted: age, sex, diagnosis at presentation, causes of gunshot injuries, type of gun, treatment given, and outcome. Data were collected in a prepared proforma on patients that presented between January and October 2005. Analysis was done on sex, age, type of gun used, assailant, site of injuries treatments and outcome. Clinical notes with doubtful records and documentation were excluded from the study. The data obtained was analyzed using 11.0 SPSS (Statistical Programme for Social Sciences) Inc. Standard Version 2001.

Table 2: Causes of gunshot injuries

Causes of gunshot injuries	No of patients n(%)
Armed Robbery Attack	19(50.0)
Accidental Discharge	11(28.9)
Shot by unknown persons	6(15.9)
Back firing during hunting	1(2.6)
Shot by NDLEA agent for trafficking marijuana	1(2.6)
Total	38(100)

Key: NDLEA= National Directorate of Law Enforcement Agency

## Results

There were 38 patients with gunshot injuries within the period of 22 months. Males were 36 and only 2 were females with male: female ratio of 18: 1. The age ranged from 10 -65 years with mean of  $32.8 \pm 16.1$  years. The age distribution is shown in Table 1.

The type of guns used by the assailants included, Dane gun 24 (63.1%), Rifle/AK 47 in 9 (23.7%) and Pistol 5 (13.2%), four of the pistols were loaded with many pellets. Table 2 shows the firearm used in the attacks.

Four patients were shot during celebratory gatherings and they were all males. The frequency of sites of injuries are as follows, Lower limbs 28 (73.9%), Upper limbs 10 (26.3%), Head and neck 8 (21.1%), Abdomen 6 (15.8%), Chest 6 (15.8%), Back (trunk) 2 (5.3%). Open fractures in these injuries were as follow, fractures of the phalangeal bones of the toes 3, femoral shaft 2, distal Ulnar 1 and base of 4<sup>th</sup> metacarpal 1.

The first aid treatment included broad spectrum antibiotics, tetanus prophylaxis and analgesic. Definitive treatment of the injuries are shown in

There was wound infection in 3(7.9%) of the patients. The fractures of the metacarpal, ulnar and femur healed satisfactorily. There toes with open phalangeal bones fracture were amputated because they were gangrenous at presentation.

## Discussion

Gunshot injuries are major problems worldwide from the human, medical, and economic perspectives<sup>13</sup>. In this study, the total number of patients seen was 38. Male: female ratio was 18.1 showing that males are predominantly injured just like any other trauma and this is similar to Aderounmu et al findings<sup>2</sup>. Also in a three-year study Onuba found out that a 52 all-male patient had gunshot injuries in a Nigerian general hospital<sup>14</sup>. Thirty of the patients (78.9%) were below the age of 40 years which could imply an enormous premature lost of productive time and lives in a productive work force. The locally made dane gun was the instrument of attack in 24 (63.1%) patients and 19 (50 %) of the thirty-eight patients were victims of armed robbery. These findings agree with Chianakwana et al who found that more men sustained gunshot injuries and the attacks were mainly from armed robbery<sup>15</sup>. The robbery attacks show that our towns and cities are consistently unsecured thus the government needs to protect lives and properties. In our study, four of the five pistol/shot gun were loaded with locally made pellets, thus victims attacked with pistols in these environments might have multiple entry/exit wounds like those attacked with the dane gun that is usually loaded with multiple pellets.

The most frequently injured site was found to be the extremities of which the lower limb was 28 (73.9%) and the upper limb 10 (26.3%) this agrees with Aderounmu et al in their previous study although their study was in gunshot warfare<sup>2</sup>. Persad et al reported that there is an increase in the extremity gunshot injuries in United Kingdom but this study was done on gunshot injuries to the extremities only<sup>8</sup>. It has been reported that most acute vascular injury that require surgical repair involves peripheral vessels and that very few patients with injury to major vessels of abdomen or thoracic cavities ever survive to reach hospital<sup>16</sup>. Gunshot injuries from armed robbery attack were the commonest cause of peripheral arterial injuries in Lagos in Nigeria<sup>17</sup>. The increased rate of gunshot injuries to the limbs might suggest the need for the attending surgeon either an orthopaedic surgeon/ general surgeon to have adequate skill to manage vascular injuries which could occur in the gunshot injuries to the limbs. This will minimize or eliminate the immediate or chronic complications that that can follow such injuries.

Table 3: Treatment instituted for the gunshot injured patients

Treatment	n(%)
Wounddressing	35(92.2)
Surgical exploration and bullet/pellet removal	7 (18.4)
Referral to another hospital	4(10.5)
First aids and patients opted for removal of pellet by traditionalist	4(10.5)
Exploratory laparatomy	3(7.9)
Digital amputation of gangrenous toes	3(7.9)
Skin traction for femoral shaft fracture	2(5.3)
Surgical exploration and ligation of femoral vein	1(2.6)
Chest tube insertion	1(2.6)
Back slab Plaster of Paris for ulnar fracture	1(2.6)

Accidental discharge was in seen 11 patients and was mainly due to dane gun. Safety measures should be incorporated to this locally made gun to minimized or avoid these accidentally inflicted injuries. Definitive management included wound irrigation and dressing, surgical exploration and removal of pellets for those with hemorrhage secondary to vascular injuries. Others included laparatomy and conservative management of fractures after wound debridement. Definitive management of gunshot fractures should be regarded as open fracture and should be treated as such. Treatment could be by external fixation (for comminuted fractures) or internal fixation. Yinusa et-al advised that for our present state of development gunshot fractures should not be primarily treated with internal fixation<sup>18</sup>. The fractures of the long bones and the metacarpal were managed conservatively and the outcome was good. The three toes with open phalangeal bones fracture were amputated because they were gangrenous at presentation, the patient had initially presented in another hospital for four days. It was noted that four of the patients were shot during celebratory gatherings in which one of the victims was killed.

Gunshots into the air in the midst of crowds during celebrations should totally be discouraged to avoid this type of injuries during celebrations. Live bullets should not be used where gunshot must be fired as part of celebrations and shooting must be directed away from the gathering. There were 5(13.5%) case of mortality and these were cases of abdominal visceral and head injuries. The most challenging aspect of the management was our inability to discourage four patients with multiple pellets in the soft tissue and bones from going to

traditional pellet extractors for pellets extraction. Their pre and post extractors visits X-rays did not show removal of any pellet by the so called pellet extractors. There is need to inform patients with gunshot injuries that there is no place for traditional pellet extraction in gunshot injuries management. This will prevent delayed definitive management and improve the outcome of the patients with gunshot injuries.

The study revealed that gunshot injuries occur more below age of forty years, the limbs were more frequently injured, armed robbery attack contributed to about half of the attacks and injuries results mainly from locally made dane guns. It also was found that pistols were loaded with multiple pellets thus there could be multiple entry and exit wounds in patients attacked with pistol in our environment.

### References

1. Saidi HS, Nyakiamo J, Faya S. Gunshot injuries as seen at the Aga Khan Hospital, Nairobi, Kenya. *East Afr Med J.* 2002; 79:188-192.
2. Aderounmu AO, Fadiora SO, Adesunkanmi AR, Agbakwuru EA, Oluwadiya KS, Adetunji OS. The pattern of gunshot injuries in a communal clash as seen in two Nigerian teaching hospitals. *J Trauma.* 2003 ; 55: 626-630.
3. Agbeja AM, Osuntokun O. Ocular gun-shot injuries in Ibadan. *Afr J Med Med Sci.* 1991; 20: 35-40.

4. Thomas MO, Ogunleye EO. Penetrating chest trauma in Nigeria. *Asian Cardiovasc. Thorac Ann.* 2005; 13:103-106.
5. Garba ES, Ukwenya AY. Sectarian religious crises in Kaduna, Nigeria: 30 cases of abdominal gunshot injuries. *South Med J.* 2002; 95:1228.
6. Solagberu BA. Epidemiology and outcome of Gunshot injuries in Civilian Population in West Africa. *Eur J Trauma.* 2003; 29: 92-96
7. Meel BL. Incidence and patterns of violent and/or traumatic deaths between 1993 and 1999 in the Transkei region of South Africa. *J Trauma.* 2004; 57: 125-129.
8. Persad IJ, Reddy RS, Saunders MA, Patel J. Gunshot injuries to the extremities: experience of a U.K. trauma centre. *Injury.* 2005; 36: 407-411.
9. Baransel A, Dulger HE, Bayazit YA. Loss of facial identification of the survivor after firearm injury to the head. *Mil Med.* 2004; 169: 227-9.
10. Smith W, Simmonds JO, Alam ZS, Grant RE. Spinal cord injury caused by gunshot wounds: the cost of rehabilitation. *Clin Orthop Relat Res.* 2003; 408: 145-151.
11. Allard D, Burch VC. The cost of treating serious abdominal firearm-related injuries in South Africa. *S Afr Med J.* 2005; 95:591-594
12. Cook PJ, Lawrence BA, Ludwig J, Miller TR. The medical costs of gunshot injuries in the United States. *JAMA.* 1999; 282: 447-454.
13. Rainio J, Sajantila A. Fatal gunshot wounds between 1995 and 2001 in a highly populated region in Finland. *Am J Forensic Med Pathol.* 2005; 26: 70-77.
14. Onuba O. Management of civilian gunshot wounds in a Nigerian general hospital. *Arch Emerg Med.* 1987; 4: 73-76.
15. Chianakwana GU, Ihegihu CC, Okafor PI, Anyanwu SN, Mbonu OO. Adult surgical emergencies in a developing country: the experience of Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra State, Nigeria. *World J Surg.* 2005; 29: 804-808.
16. Owen-Smith MS. Management of high velocity missile wounds. *Postgraduate Doctor Africa.* 1981; 303-309
17. Thomas MO, Giwa SO, Adekoya-Cole TO. Arterial injuries in civilian practice in Lagos, Nigeria. *Niger J Clin Pract.* 2005; 8: 65-68.
18. Yinusa W, Ogirima MO. Extremity gunshot injuries in civilian practice: the National Orthopaedic Hospital Igbobi experience. *West Afr J Med.* 2000; 19: 312-316