

Road Traffic Accidents and Bone Fractures in Ughelli, Nigeria

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Abstract: Road traffic accidents and bone fractures in Ughelli, Nigeria

Introduction: Bone fracture has been described as the break in continuity of a bone. This could be the result of excessive force, stress, or trivial injury as occurs in pathologic fractures.

Objectives: This study was aimed at determining the pattern of bone fractures in Ughelli metropolis. It is believed that the outcome of the study will no doubt improve management of orthopedic cases.

Materials and method: This study was a one year retrospective study which involved records of all patients who presented for radiographic examination at Celian Clinic, Ughelli, between July 2013 and July 2014, showing relevant clinical information including age and gender of patients, data obtained were presented in frequencies.

Results: Two hundred and sixteen bone fracture cases were reviewed, and the fractures were observed to have occurred more in males than in females, and in their 3rd and 4th decades of life. Majority of the fractures were observed in the femur, and least in the patella. Road traffic accidents (RTA) were observed to be the leading cause of bone fractures.

Conclusion: In this study, RTA has proven to be a major cause of bone fractures, while males in their 3rd and 4th decades of life, constitutes most of its victims. The lower extremity has been observed to be the mostly affected site of bone fractures.

Keywords: Extremities, Femur, Fractures, Road Traffic Accident, Radiographs.

I. Introduction

Bone fracture has been described as the break in continuity of a bone.^[1] This could be the result of excessive force, stress, or trivial injury as occurs in pathologic fractures.^[2] Road traffic accident (RTA) have severally been documented to be the cause of majority of the fractures especially Nigeria and some of the cases have been associated with eventual fatality.

In spite of the population of Ughelli, a major town in south southern Nigeria inhabiting predominantly middle and low class individuals, scant studies on RTA and fractures have been conducted in this town which is reputable for the use of motorcycles notorious for RTAs.

This article was aimed at determining the pattern and common causes of fractures in Ughelli and will no doubt prove very useful to epidemiologist and health sector managers especially with regard to the prevalent types and causes of fractures amongst the studied population in an attempt to reduce these cases to a barest minimum.

II. Materials And Method

This study was a one year retrospective study which involved records of all patients who presented for radiographic examination at Celian Clinic, Ughelli, between July 2013 and July 2014. Relevant clinical information including age and gender of patients were obtained and presented in frequencies and percentage frequencies using Microsoft Excel 2007. Reports where age or gender of patients was not stated, or where original x-ray request forms could not be retrieved, were excluded from this study. Approval for this study was obtained from Celian clinic ethics management committee, Ughelli as recommended by the Declaration of Helsinki in 1995 (revised in Edinburgh 2000).^[3]

III. Results

Two hundred and sixteen bone fracture cases were reviewed, and the fractures were observed to have occurred more in males than in females, and in the age group of (21-40). Majority of the fractures were observed in the femur, and least in the patella. Road traffic accident (RTA) was observed to be the leading cause of bone fractures. As shown in table 1, fractures were observed to occur more in the lower extremity with the femur being the most fractured bone accounting for 49 (22.69%) followed by the tibia/fibula 37 (17.13%). The most fractured bone in the upper extremity was the humerus 28 (12.96%) followed by the clavicle with 20 (9.26%) of the fractures. Skull fractures accounted for 8 (3.70%), mandible 2 (0.83%). The radius constituted 6 (2.78%),

while 2 (0.93%) of the fractures occurred in the ulna. The study also showed that 4 (1.85%) phalangeal fractures, 2 (0.93%) spinal, 25 (11.57%) tibia and 8 (3.70%) fibula fractures were observed during the period. The foot comprised 4 (1.85%), the pelvis 3 (1.39%) and the ribs 9 (4.17%) of the entire fractures respectively. The least fractured bone was the patella with a single case recorded, accounting for (0.46%) of the total fractures studied.

Table 1: Bones involved in fracture

BONES	FREQUENCY	PERCENTAGE (%)
SKULL	8	3.70
MANDIBLE	2	0.93
CLAVICLE	20	9.26
HUMERUS	28	12.96
RADIUS	6	2.78
ULNAR	2	0.93
RADIO/ULNAR	8	3.70
PHALANGES	4	1.85
SPINE	2	0.93
FEMUR	49	22.69
PATELLA	1	0.46
TIBIA	25	11.57
FIBULA	8	3.70
TIBIO/FIBULA	37	17.13
FOOT	4	1.85
PELVIS	3	1.39
RIBS	9	4.17
TOTAL	216	100(%)

As shown in table 2, the femur was the most fractured long bone with 19 (38.78%) of its fractures occurring at its distal third, 17 (34.49%) of fractures occurred at its proximal third, while 13 (26.53%) at the midshaft. The tibia/fibula was next with fractures at its distal third, midshaft and proximal third accounting for 17 (45.95%), 12 (32.43%) and 8 (21.62%) of its fractures respectively. This was followed by the humerus with midshaft accounting for 14 (50.00%), proximal third 8 (28.57%) and the distal third 6 (21.43%) of its fractures. Most tibial fractures occurred at the proximal third 12 (48.00%), midshaft 9 (36.00%), and least at the distal third 4 (16.00%). All fractures of the clavicle occurred at the middle third. The fibula had most of its fractures at the midshaft 5 (62.50%), distal third 2 (25.00%), and least at the proximal third 1 (12.50%). The radius together with ulnar was mostly fractured at the distal third (4 cases). The proximal third and midshaft had equal proportions with each having 1 (25.00%) fracture at each site respectively. In the radius, 4 (66.67%) fractures occurred at the distal third while only 2 (33.33%) were observed at the midshaft. The study showed that the ulnar was the least fractured long bone with equal proportions of fractures at the midshaft and distal third respectively.

Table 2: Frequency of individual bone fractures and sites of fractures

Bones	Site of fracture/ % frequency			
	f(% f) Proximal 1/3	f(% f) Midshaft	f(% f) Distal 1/3	f(% f) Total
Clavicle	-	20 *(100)	-	20 (10.93)
Humerus	8 *(28.57)	14 *(50.00)	6 *(21.43)	28 (13.30)
Radius	-	2 *(33.33)	4 *(66.67)	6 (3.28)
Ulnar	-	1 *(50.00)	1 *(50.00)	2 (1.09)
Radio/ulnar	2 *(25.00)	2 *(25.00)	4 *(50.00)	8 (4.37)
Femur	17 *(34.69)	13 *(26.53)	19 *(38.78)	49 (26.78)
Tibia	12 *(48.00)	9 *(36.00)	4 *(16.00)	25 (13.66)
Fibula	1 *(12.50)	5 *(62.50)	2 *(25.00)	8 (4.37)
Tibio/fibula	8 *(21.62)	12 *(32.43)	17 *(45.95)	37 (20.22)
Total	48 (26.23)	78 (42.62)	57 (31.15)	183 (100)

As shown in table 3, two hundred and five (205) bone fractures were classified as either simple or compound.^[4] Simple fractures accounted for 116 (56.59%) while compound comprised 89 (43.41%). The study revealed that of 116 simple fractures recorded, 42 (36.21%) were transverse, 7 (6.03%) malunited, 22 (18.97%) oblique, 36 (31.03%) comminuted and 9 (7.75%) unspecified type of fractures respectively, while the compound fractures accounted for 24 (26.97%) transverse, 6 (6.74%) malunited, 19 (21.35%) oblique, 35 (39.32%) comminuted and 5 (5.62%) unspecified fracture types respectively.

Table 3: Class and type of fractures

PATTERN	CLASS					
	TRANSVERSE	MALUNITED	OBLIQUE	COMMUNITED	UNSPECIFIED	TOTAL
SIMPLE	42 (63.64)	7 (53.85)	22 (53.65)	36 (50.70)	9 (64.29)	116 (56.59)
COMPOUND	24 (36.36)	6 (46.15)	19 (46.34)	35 (49.30)	5 (35.71)	89 (43.41)
TOTAL	66 (100)	13 (100)	41 (100)	71 (100)	14 (100)	205 (100)

Table 4, showed that ninety four (94) (43.52%) of all 216 fractures occurred in the age group of (21-40), 50 (32.15%) occurred in the 5th and 6th decades, while only 41 (18.98%) were observed in the first and second age intervals. Subjects above 60 years were recorded to display the least percentage of fractures 31 (14.35%).

Table 4: Age's of patients with fracture.

AGE	FREQUENCY	PERCENTAGE (%)
0-20	41	18.98
21-40	94	43.52
41-60	50	23.15
≥60	31	14.35
TOTAL	216	100

Table 5, showed fractures occurred more in Males 124 (57.41%) than in Females 92 (42.59%).

Table 5: Gender distribution of patients with fracture

GENDER	FREQUENCY	PERCENTAGE
MALE	124	57.41
FEMALE	92	42.59
TOTAL	216	100

As shown in table 6, RTA constituted the leading cause of bone fractures accounting for 125 (57.87%) of bone fractures while domestic/sport accounted for 59 (27.31%), and gunshot injury accounted for 9 (4.17%) of cases. The table also showed that 23 (10.65%) of cases had uncertain cause.

Table 6: Causes of fractures

CAUSE	FREQUENCY	PERCENTAGE (%)
RTA	125	57.87
GUNSHOT INJURY	9	4.17
DOMESTIC/SPORT	59	27.31
UNCERTAIN	23	10.65
TOTAL	216	100

IV. Discussion

The study recorded two hundred and sixteen cases of bone fractures over a period of one year and fractures were observed to occur more in the lower extremities, with the femur being the most fractured bone. This was similar to findings by several authors,^[5-10] but was however different from findings by Adoga and Ozoilo who reported the skull to be the most fractured bone.^[11] In the index study, the most fractured bone in the upper extremity was the humerus. This was similar to a study in Ethiopia in which the humerus was found to be the most fractured bone in the upper extremity.^[5] The upper extremities play a very essential role in mobility and control especially with the use of motorcycles which are a common mode of transportation in the area of study. Extensive contraction of the muscles of the arm have been shown to be mainly responsible for fractures which occur in this region of the body.^[12] This may have been the reason for the predominance of humeral fractures in this study.

A large proportion of the fractures were observed to have occurred in males within their 3rd and 4th decades of life. This was similar to findings from previous studies.^[6,13-15] The observed distribution could have been a consequence of the extensive mobility inherent in individuals within this age group.^[16] Furthermore, male predominance for fractures could be attributed to the involvement in manual activities (construction, vehicular driving, motorcycle riding etc.) which may result in RTA.

Road traffic accidents have been reported to be a major cause of bone fractures.^[5-9,11,13,16-34] The prevalence of RTA as the major cause of bone fractures may not be unconnected to motorcycle accidents, which have been described to be the leading form of RTAs.^[5,8,13,17,21] Commercial motorcycle are a well established

means of livelihood to teaming number of unemployed youths in Ughelli metropolis. In Nigeria, more than two third of all RTA have been shown to involve commercial motorcyclists.^[31] This may be the reason for the higher occurrence of fractures on the lower extremities, the region of the body involved.^[29] Individuals engaged in motorcycle riding are often in their 3rd and 4th decades of life and commonly display carefree behaviors which could result in RTA.^[11]

Simple fractures accounted for the majority of the cases recorded in this index study. This was very similar to a previous observation.^[24] The age of individuals affected as well as the force exerted by muscle attachments to the long bones could be the reasons for the finding recorded.^[12]

V. Conclusion

In this study, Road Traffic Accidents (RTA) were demonstrated to be a leading cause of bone fractures especially in individuals in their 3rd and 4th decades of life, constituting most of its victims. Males were observed to be predominantly involved with the lower extremity the most affected site of bone fractures.

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