



Motorcycle Accident injuries seen at Kakamega Provincial Hospital in Kenya.

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Background: Injuries related to motorcycles contribute significantly to the number of road traffic injuries. This study was aimed at determining the pattern of injuries caused by motorcycle crash among patients seen at Kakamega provincial hospital in Kenya...

Methods: This was a cross sectional study which was conducted in Western Provincial General Hospital, Kakamega. Medical records of 116 patients who were involved in motorcycle accidents were retrieved after ethical approval from the hospital administration. Data retrieved was stratified according to age and type of injury, which is presented using tables and mean mode and standard deviation calculated.

Results: There were 100 males and 16 females. Tibio fibular fractures predominated at 29.3%, with 25% of these being open and the rest closed, Femur fractures accounted for 19.8% and other injuries included chest (10.3%), soft tissue injuries (20.7%), head injuries (12.1%), foot injuries (3.4%), ankle injuries, hip dislocations and forearm bone fractures (1.7% each). No case of spinal injury was recorded. The fatal cases which accounted for 4.3% all uniformly presented had head injury.

Conclusion: Tibia-fibular injury is the commonest observed injury, and mortality is commonly associated with head injury.

Introduction

The WHO report 2009 on motor cycle accidents in the developing world states that wearing helmets reduces motorcycle associated deaths by 40% and reduces the risk of severe injury by 70%¹. In Malaysia and Singapore where motorcycle use is extremely common, studies have shown that head and neck injuries are seen in up to 32% of motorcycle accident victims¹. We present our experience in Kakamega Provincial Hospital,

Subjects and Method

This was a descriptive cross sectional study of all motor cycle injuries as they presented in accident and emergency in Western Provincial General Hospital between January 2009 and June 2009. All recruited patients files and information was obtained from casualty records, mortuary records and ward admission files. Variables studied included age, sex and site of injury. Age was stratified into ten year blocks were done, and the injuries divided into limb injuries, chest injuries, head and soft injuries. The limb injuries were further sub-divided into femur, tibiofibular, radioulnar, foot fractures (metatarsal and tarsal), ankle and hip fractures and dislocations. Data was analyzed using SPSS for Windows 18 and a p-value of 0.05 was considered statistically significant

Results:

Males accounted for 100 (86.2%) of the victims. The male to female sex ratio was 6.25: 1. The patients' ages ranged from 2 to 79 years, with the majority (61.2%) in the 20-29 year age group. The tibio-fibular fractures were recorded in 29.3% of cases followed soft tissue injuries (19.8%) and head injury (12.1%). Twelve patients (10.3%) suffered chest injuries (Table 1). None of the patients sustained spinal injury. Three-quarters of the tibial fractures were closed. Majority of the femur fractures were closed femoral shaft fractures and the rest were neck of femur fractures (Table 2).

All fatalities had multiple injuries with head injury uniformly present, besides chest injury and open fractures of the lower limbs.

Table 1. Distribution of Motor Cycle Accidents Injuries.

Age	Limb injuries	Chest injury	Head injury	Soft tissue injury	Number	(%)
0-9	2	0	0	0	2	(1.7%)
10-19	6	2	0	3	11	(9.5%)
20-29	38	8	10	15	71	(61.2%)
30-39	12	1	2	3	18	(15.5%)
40-49	4	1	2	2	9	(7.7%)
50-59	3	0	0	0	3	(2.6%)
60-69	1	0	0	0	1	(0.9%)
70-79	1	0	0	0	1	(0.9%)
Total	67	12	14	23	116	(100)

Table 2. Distribution of limb injuries due to motor cycle accidents

Part Affected	Open Fracture	Closed Fracture	Dislocation	Total	(%)
Tibia /Fibula	8	26	0	34	(50.7)
Femur	2	21	0	23	(34.3)
Ankle	0	0	2	2	(3.0)
Tarsal /Metatarsal	0	4	0	4	(6.0)
Radioulnar	0	2	0	2	(3.0)
Knee(Patella)	0	1	0	1	(1.5)
Hip	0	0	1	1	(1.5)
Total	10	54	3	67	(100)

Discussion

Injuries related to motorcycles contribute significantly to the number road traffic injuries seen at Western provincial hospital, Kakamega, taking out a significant number of lives and burdening health workers with consumption of hospital resources. Lower limb injuries involving the femur fractures, hip dislocation, tibial fractures and ankle injuries constituted 51% of all the injuries. The findings in our study were in agreement with what was found in studies done in other countries that showed that injuries to extremities were the commonest^{3,4,6,7}. Most injuries occurred when the motorcycles were hit by cars, and this may explain why leg trauma was the commonest. Kortor et al¹² in a West African study, found that out of 429 motor cycle accidents victims, 238 (55.5%) sustained lower limb injuries. Oluwadiya et al⁷ analyzed 145 victims of motor cycle accidents and of these, 115 (79.3%) had injuries involving their lower limbs. Similar findings were reported by Phillippo et al⁹ in Mwanza, Tanzania, in their study, although their study included car accidents making comparisons hard.

When injury is due to falls at high speed as occurs in Malaysia, studies there have shown the common injury to be cervical spine trauma¹. In these countries however, special roads have been constructed besides the highways for cars and so most motorcycle accidents are from skidding and falls rather than collisions with cars. A recent study from Jamaica found the most common injury to be soft tissue injury followed by the extremities¹⁰. A subsequent report following the above on secondary prevention of motorcycle accidents showed that specialized protective motorcycle clothing does

provide some protection against this type of injury mechanism reducing up to 43% of soft tissue injuries and 63% of extensive injuries^{11,12}.

The motorcycle crash facts 2004-2008 in NSW(New South Wales state of Australia) showed that young riders with age bracket of 17-25 had more fatalities as compared to older riders^{2,6,7,8,9}. We found similar results with age 20-29 accounting for 61.2% of the injured population. All mortalities were associated with head injury and was witnessed in the same age group. The young male preponderance in the present study has been reported elsewhere^{6,7,8,9}. This may be due to the fact that most of the riders are young energetic men in business trying to make money from transporting customers. Kortor¹³ in his study had a higher mean age of 43.1 years, while Phillipot al⁹ in Tanzania and Oluwadiya et al⁷ found a mean age of 25.7, and 31.9 years respectively. AniekanUdoEkere¹⁴ in his study found that the peak age of motor cycle accident victims was 20-39 which constituted 68.2% of all patients studied^{7,8,13,14}. The general message from these studies seems to be that the affected age group is early adulthood. It is to be noted that this age group is the one that generates incomes in terms of a country's workforce. It cannot be overstated that strategies to save them from this menace must therefore be enhanced.

Male patients were greater than females at a ratio of 6.25:1. This is the highest sex difference in most studies. Phillipot al⁹ in their study, the male to female ratio was 2.3:1, and in the study by Kortor¹³ it was 2.2:1. Aniekan et al¹⁴ found male to female ratio of 2:1 while Oluwadiya⁷ found a 2.8:1 male to female sex ratio. The use of helmets has been shown in literature to reduce fatality^{1,9,10} though its use has been found sometimes to be erratic⁷. Our study did not evaluate use of helmet due to absence or erratic capturing of this detail in the files. Further studies need to be undertaken to examine the impact of shin protectors on the injury patterns in this part of the world, besides general emphasis on road safety awareness among the users of this transport system. This will help save the many young lives that are ruined by these motorcycle accidents. Health care personnel and hospitals in the Western Kenya region also need to be well equipped to handle lower limb trauma in terms of training and facilities, as this is the common injury they are likely to witness from motorcycle accidents.

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