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Original Research Article

Assessment of the Incidence of Head Injuries at a Tertiary Centre

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Conflict of interest: Nil

Abstract:

Background: In the world, particularly among young people, head injuries are a major public health and socio-economic problem that leads to death and disability.

Aims and Objectives: The present study was conducted to assess the incidence of head injuries.

Materials & Methods: The present study comprised 80 victims of head injuries of both genders at the department of Forensic Medicine and Toxicology. The criteria for exclusion were decomposed bodies, unknown natural diseases, admitted cases, and fatalities due to other body parts. The results thus obtained were subjected to statistical analysis. P values less than 0.05 were considered significant results.

Results: The type of incidence was motorcyclist in 23 (most common), two-wheeler in 21, car or bus in 19, and pedestrian in 17. The type of meningeal haemorrhage was subdural in 43 cases, subarachnoid in 17 cases, and epidural and subdural in 20 cases. The site of fracture was frontal in 32 (most common), parietal in 26, temporal in 13, and occipital in 9 (least common) cases.

Conclusion: Maximum cases were seen in age group 21-40 among motor cyclists.

Keywords: Head, Trauma, Hemorrhage.

Introduction

In the world, particularly among young people, head injuries are a major public health and socioeconomic problem that leads to death and disability. Nowadays, the term "head injury" has been replaced by the new term "traumatic brain injury (TBI)." TBI is defined as a cerebral insult, not of a degenerative or congenital nature, due to external mechanical force that possibly leads to permanent or temporary disabilities of cognitive, physical, and psychosocial functions with or without an altered level of consciousness [1]. Traumatic brain injury is becoming more prevalent around the world as consequence of increased mechanization, inadequate traffic education, and poor implementation of traffic safety rules, especially in developing countries like India. In India, most deaths due to road traffic accidents (RTAs) take place within 24 hours of injury, mostly before reaching the hospital. This is mainly due to a delay in accessing a health care facility [2]. Traumatic brain injury (TBI) is the leading cause of death and disability in people younger than age 45 in the United States [3]. The leading causes of traumatic brain injury are falls and motor vehicle crashes [4]. Most of the injuries and fatalities worldwide are caused by Road traffic accidents (RTA). An estimated 1.2 million people are killed each year and around 50 million are injured due to RTA occupying 30–70% of orthopedic beds in hospitals in developing countries [5].

Developing countries bear a large share of the burden, accounting for 85 percent of annual deaths and 90 percent of the disability-adjusted life years (DALYs) lost because of road traffic injuries [6]. RTA represents 45–50% of the causes of head injuries, and young adults were the most common victims. Every form of transportation has its own risks, and due to the momentum caused by the high-speed engines used in the new motor vehicles, the consequences of an accident are often worse [7].

Aims and Objectives

The present study was conducted to assess the incidence of head injuries.

Materials and Methods

The present study comprised 80 victims of head injuries of both genders at the department of Forensic Medicine and Toxicology (FMT) at Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India, in collaboration with the department of FMT at Darbhanga Medical College and Hospital, Darbhanga, Bihar, India, and Narayan Medical College and Hospital, Jamuhar, Rohtas, Bihar, India. In all cases, consent was obtained from a relative or family member. The criteria for exclusion were decomposed bodies, unknown natural diseases, admitted cases, and fatalities due to other body parts. Data pertaining to cases such as name, age, gender, etc. was recorded. Parameters such as pathological fracture, pattern of skull fracture, intracranial haemorrhage, and other major injuries were noted during the examination. The duration of the study was from July 2022 to December 2022. The results thus obtained were subjected to statistical analysis. P values less than 0.05 were considered significant results.

Results

Table 1: Age and gender wise distribution of incidence of head injury

Age group (Years)	Male	Female	P value
0-20	6	3	0.082
21-40	24	17	0.06
41-60	10	9	0.091
>60	7	4	0.073
Total	47	33	

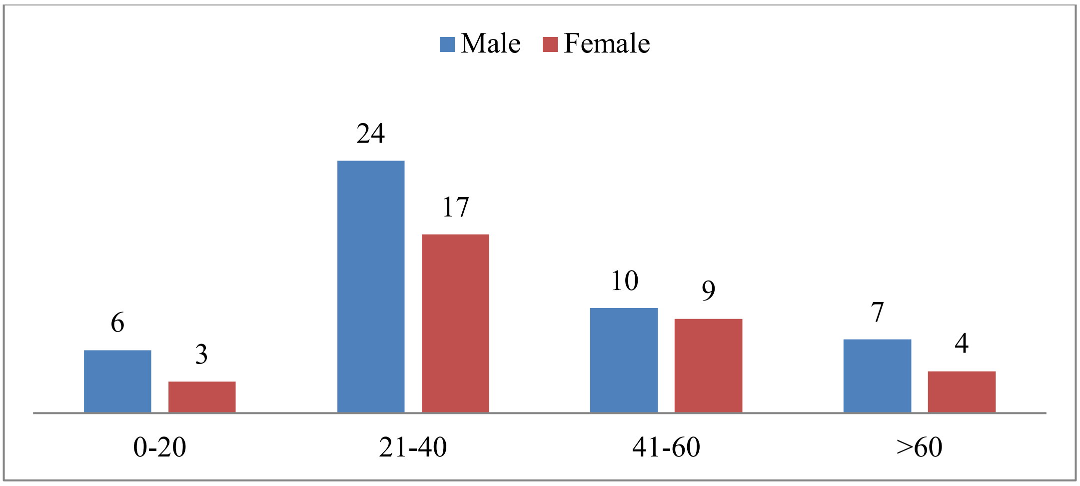

Figure 1: Age and gender wise distribution of incidence of head injury

Table 1 and Figure 1 show that age groups 0–20 years had 6 males and 3 females, 21–40 years had 24 males and 17 females, 41–60 years had 10 males and 9 females, and >60 years had 7 males and 4 females. The difference was non-significant (P> 0.05).

Table 2: Assessment of parameters associated with head injury

Parameters	Variables	Number (%)	P value
Type of incidence	Motorcyclist	23(28.75%)	0.27
	Two Wheeler	21(26.25)	
	Car/Bus	19(23.75%)	
	Pedestrians	17(21.25%)	
Type of meningeal hemorrhage	Subdural	43(53.75%)	0.07
	Epidural & subdural	20(25%)	
	Subarachnoid	17(21.25%)	
Site of fracture	Frontal	32(40%)	0.09
	Parietal	26(32.5%)	
	Occipital	09(11.25%)	
	Temporal	13(16.25%)	

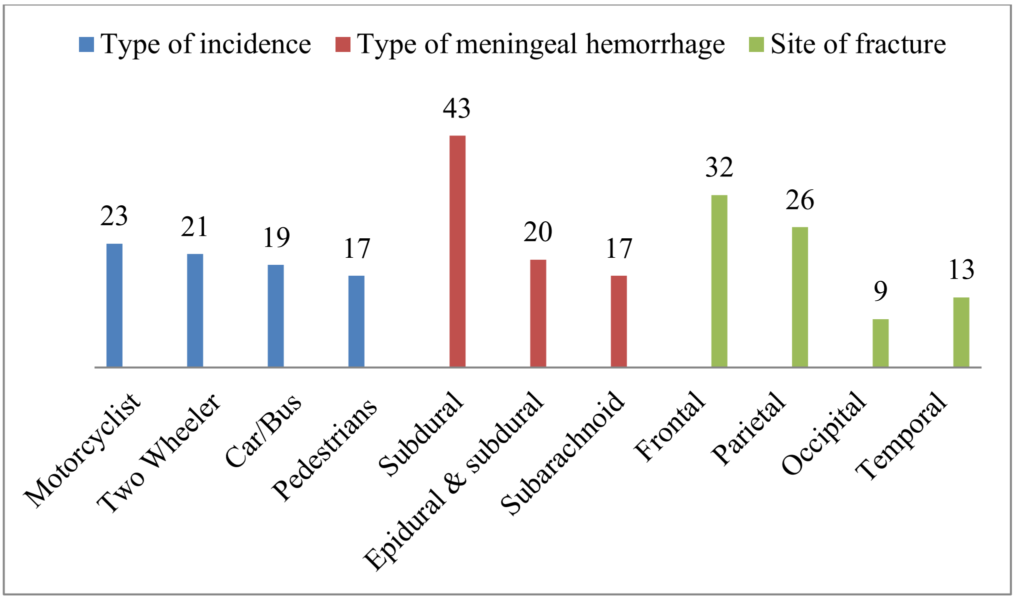

Figure 2: Assessment of parameters associated with head injury

Table 2 and Figure 2 show that the type of incidence was motorcyclist in 23 (most common), two-wheeler in 21, car or bus in 19, and pedestrian in 17. The type of meningeal haemorrhage was subdural in 43 cases, subarachnoid in 17 cases, and epidural and subdural in 20 cases. The site of fracture was frontal in 32 (most common), parietal in 26, temporal in 13, and occipital in 9 (least common) cases. The difference was significant (P< 0.05).

Discussion

The characteristics and severity of traumatic brain injury (TBI) are affected by the type, direction, intensity, and duration of forces. Forces that may contribute to TBI include angular, rotational, shear, and translational forces [8].

The previous head injury guideline produced by NICE in 2003 (NICE clinical guideline 4) and updated in 2007 resulted in CT scanning replacing skull radiography as the primary imaging modality for assessing head injury [9].

It also led to an increase in the proportion of people with severe head injuries having their care managed in specialist centers. This has been associated with a decline in fatalities among patients with severe head injuries. This update is needed because of the continuing importance of up-to-date evidence-based guidance on the initial assessment and early management of head injuries. Appropriate guidance can enable early detection and treatment of life-threatening brain injury, where present, as well as early discharge of patients with negligible risk of brain injury. Therefore, it can save lives while likewise preventing needless crowding in hospital emergency rooms and observation wards.10In the present study, age groups 0–20 years had 6 males and 3 females, 21–40 years had 24 males and 17 females, 41–60 years had 10 males and 9 females, and >60 years had 7 males and 4 females. Goyal A et al., [11], in 2021, find similar findings.

We observed that the type of incidence was motorcyclist in 23 (most common), two-wheeler in 21, car or bus in 19, and pedestrian in 17. The type of meningeal haemorrhage was subdural in 43 cases, subarachnoid in 17 cases, and epidural and subdural in 20 cases. The site of fracture was frontal in 32 (most common), parietal in 26, temporal in 13, and occipital in 9 (least common) cases. Awasthi et al. [10], and Goyal A et al. [11], in 2021 find similar findings.

Awasthi et al.[12], in 2018 reported on the frequency of head injuries in car accidents, the pattern of head injuries, and victim characteristics like age, sex, involved vehicle, accident circumstances, and the use of helmets or not. In this study, only those postmortem cases were observed that reached the mortuary after an accident. The criteria for exclusion were decomposed bodies, unknown natural diseases, admitted cases, and fatalities due to other body parts. Out of 121 cases, 88.42% were male and 11.57% were female. In the age range of 21 to 30 years, the highest incidence of RTA was found. 99.22% of the two-wheelers did not wear helmets. The majority of the victims were two-wheelers (46.34%). All of the victims had multiple abrasions and bruises on different parts of their bodies. Lacerations, fractures to the skull, and brain injuries all occurred in 83.47%, 85.12%, and 100% of the victims, respectively, 10.74% had injury to the abdominal viscera, 16.52% had injury to the rib cage bones, 14.87% to the heart and lungs, 17.35% to the liver and spleen, and 7.43% to the kidney. All of the victims showed multiple bruises and abrasions on different parts of their bodies.

83.47%, 85.12%, and 100% of the victims suffered from lacerations, skull fractures, and brain injuries, respectively. 10.74% of the victims also suffered injuries to the abdominal viscera, 16.52% to the rib cage bones, 14.87% to the heart and lungs, 17.35% to the liver and spleen, and 7.43% to the kidneys. In the skull, linear or fissure fracture was the commonest type of fracture (60.33%), followed by comminuted fracture (16.52%) and depressed fracture (8.26%). The temporal bone (29.12%) and parietal bone (32.03%) had the highest fracture rates, respectively. Subdural haemorrhage affected 85.95% of the victims.

In Rupani R et al. [13], study, a total of 100 cases were included in the study, and it was observed that Common causes of intracranial lesions due to blunt force are vehicular accidents, assault by blunt weapons, falls from heights, etc. The majority of cases are due to vehicular accidents.

Limitations of the study

The sample size was small, and the study's duration was short.

Conclusion

In the present study, we found that the majority of cases were seen in the age group 21–40 among motorcyclists. The most common type of meningeal haemorrhage was subdural, and the most common site of fracture was the frontal bone.

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