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Some Medico-legal Aspects of Traumatic Head Injuries Admitted to Neurosurgery Department at Sohag University Hospitals

Asmaa Mohammed Khalaf Ahmed[1], Maha Abdelhamid Hilal[1], Bahaa Ghareeb Alaa-eldien[2], Naglaa Gaber Ahmed Diab [1], Rasha Elhaddad Ali Mousa[1]

[1] Department of Forensic Medicine and Clinical Toxicology, Faculty of Medicine- Sohag University, Egypt.
[2] Department of Neurosurgery, Faculty of Medicine, Sohag University, Egypt.

Abstract

Background: Traumatic head injury (THI) is a cause of morbidity and mortality all over the world. This study aimed to explore the medicolegal aspects and the pattern of THI presented to the neurosurgery department at Sohag University Hospital. **Methodology:** This is a prospective, cross-sectional study that involved 581 cases admitted to neurosurgery department at Sohag University Hospital from July to December 2022. The collected data were patient demographics, characters of trauma, clinical presentation, radiological findings, type of treatment, and outcome. **Results:** The most affected age group was children under six years old. Males accounted for 72.6% of cases. 84.5 % of head traumas were accidental; falling was the most common cause (44.2%). Mild trauma was denoted in 73.7 % of cases. The most common radiological finding was fissure fracture (48.9%), and the most common site was the parietal bone (21.5%). Most of the cases were treated conservatively. The largest number of cases experienced good recovery. **Conclusion:** The present study concluded that THI were common in males from rural areas aged less than six, and the most common cause was falling. Parietal bone fractures were the most common presentation. Most cases had mild presentations with full recovery.

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Key words Trauma, Head injuries, Medicolegal, Sohag

Background:

Injuries to the scalp, skull bones, meninges, and brain produced by external application of mechanical force are called Traumatic head injuries (THI). THI is one of the frequent injuries seen in emergency rooms (El-Farouny, 2021). Injury to the head is a major risk for morbidity and mortality worldwide, as it may lead to transient or permanent affection of brain functions such as altered consciousness, loss of cognitive function, impaired physical, and psychosocial capabilities (Ashraf et al., 2020).

Head injuries can result from different causes as motor vehicle accidents (MVAs), falls, sports-related injuries and assaults (Alnaami et al., 2019, Tong et al., 2021).

Clinical presentation could be scalp wound, hemorrhage, brain concussion or compression. Radiological evaluation is essential for any case of THI to detect fractures or intracranial hemorrhage. The severity of head trauma could be classified into mild, moderate or severe according to Glascow coma scale (GCS) (Landes et al., 2017). Traumatic head injuries terminate in either full recovery, mild or moderate disability, vegetative state, or death (Alnaami et al., 2019, Tong et al., 2021).

THI is a chief cause of permanent disability and economic loss to society (Okidi et al., 2020). To decrease the burden of head trauma and to improve the outcome, epidemiologic studies are needed to explore the different risk factors and outcomes of THI, hence the appropriate measures may possibly be taken.

Aim of the Study:

The present study aimed to assess the medico-legal aspects, the pattern and outcome of traumatic head injuries presented to neurosurgery department at Sohag University Hospital over six months from July 1st to December 31st, 2022.

Methods:

Study design and settings:

This is a prospective cross-sectional study. Sohag University Hospital is the tertiary health care level that serves about six million people of the entire Sohag population.

Study population:

The study included all traumatic head injuries (THI) admitted to the Neurosurgery department at Sohag University hospital from the first of July to the end of December 2022.

Inclusion criteria:

All cases of head injuries (scalp, skull, meninges, and brain) admitted to Neurosurgery department during the study period were included regardless of other associated trauma.

Exclusion criteria:

Patients who refused to share in the study and those discharged on their request before completing clinical assessment.

Collected data:

- Sociodemographic data: age, gender, residence, educational level, and occupation.

- History of trauma: manner, type of instrument, cause of trauma, and site of trauma.
- Data of clinical assessment: degree of severity of head injury according to Glasgow coma scale "GCS" (mild = GCS >11, moderate = GCS 8:11, and severe = GCS < 8), neurological assessment (concussion, compression, neurological deficit) and associated external injury (scalp wound).
- Radiological findings: skull fracture (number, types, and sites), intracranial hemorrhage; ICH; (site and type), and other injuries.
- Treatment: type of treatment (conservative or operative), and outcome at discharge (complete recovery or complicated outcome i.e. permanent infirmity or death).

Statistical analysis:

The collected data were tabulated using Excel 365 and analyzed using SPSS version 16 (Statistical Package for the Social Sciences v. 16). Categorical data were presented as frequency and percentage, while numerical data were presented as mean ± standard deviation (SD). Comparisons were carried out using Chi-square test where p values less than 0.05 were considered statistically significant.

Ethical considerations:

The study protocol was approved by the Research Ethical Committee for Sohag faculty of medicine (IRB registration number: Soh-Med-22-05-02). An informed written consent was obtained from all participants in the study or their legal guardians. All patients' personal information was kept anonymously to guarantee confidentiality.

Results

Out of 620 THI cases presented to the Neurosurgery department at Sohag University Hospital between July and December 2022, 581 were included. The sociodemographic characteristics are shown in table 1. The age of the participants ranged from less than 1 year to 85 years; the mean age was 17.2 ± 16.5 years. The highest incidence of THI was present in the age group <6 years (31.7%) followed by the age group 18-<40 years (25.6%), then age groups 6-<12 years and 12-<18 years (19.1% and 11.9% respectively), next age group 40-<60years (8.4%), lastly age group ≥ 60 years (3.3%). Most cases were males (72.6%); male to female ratio was about 7:3, three thirds of the cases belonged to rural areas (70.4%) while the remaining third belonged to urban areas (29.6%). Seventy-five percent of cases were unemployed; toddlers, students, and unemployed adults, while 25% of cases had a profession. The educational level was different between participants; 42.5% had no formal education, 29.1% had basic level of education, 18.4% were included in the secondary education, and 10% had reached tertiary education level, either graduate or postgraduate certificate.

Table 2 represents the medico-legal characteristics of trauma; 84.5% of cases were accidental while 15.5% were homicidal. The causative instruments were blunt in 98.1% of cases and sharp in less than 2% of cases. The most frequent cause of trauma was falling (44.2%), followed by road traffic accidents (RTA) (33.6%) then assaults (15.5%) and hitting hard objects (HHO) (6.7%). The most common site of trauma was parietal region followed by frontal, occipital and temporal regions (40.6%, 31%, 16.7%, and 3.1% respectively). An additional 8.6% of cases reported more than one site of head trauma.

As regards clinical presentation (table 3), 58.2% of cases had scalp wounds, 65.6% of patients reported symptoms of concussion, 18.1% of cases showed signs of compression and 3.3% had neurological deficits. According to GCS, 73.7% of cases had mild THI (GCS > 11), 21.3% of cases had moderate THI (GCS 8:11) while 5% of cases had severe THI (GCS < 8).

Radiological findings of the studied cases were as follows (table 3): 43.9% of cases showed isolated skull fracture, 14.5% of cases showed intracranial hemorrhage, 0.7% of cases showed brain edema and 22% of cases showed mixed findings, while 18 .9% of cases had free radiograph.

As to skull fractures, 60% of patients had a single fracture while 5.7% of cases had multiple fractures. The most represented type of fracture was fissure fracture (48.9%) followed by compound depressed fracture (10.7%), and simple depressed fracture (5.2%). The remaining 1% of cases had more than one type of fracture. The frequently affected bone was parietal then frontal, skull base, occipital and temporal (21.5%, 16.5%, 9.8%, 8.8%, and 3.3%; respectively). 2.2% of cases had multiple site fractures and 3.6% of cases had extended fractures involving more than one bone.

Intracranial hemorrhage was found in 31.8% of patients' radiographs; most of them had brain contusions and extradural hematomas (13.9% and 13.3% respectively). The remaining types were subdural hemorrhage, intracerebral hemorrhage, subarachnoid hemorrhage, and mixed types (1.7%, 0.7%, 0.5%, and 1.7%, respectively). The most frequent site of hemorrhage was parietal region followed by frontal, temporal, and occipital regions (14.4%, 8.1%, 5%, and 1.7%, respectively), furthermore 2.6% of cases showed hemorrhage extending to multiple areas.

As to treatment and outcome, most cases received only conservative treatment (83.5%) and few cases indicated surgical interventions (16.5 %) (figure 1). Regarding the outcome, 86% of cases showed full recovery, while 14% showed complicated outcome (death or permanent infirmity) (figure 2).

The results of the present study showed that the cause of trauma is highly significantly related to gender, age, occupation, and level of education as P<0.001. There is no relationship between the cause of THI and residence (table 4). The most frequent cause of head injury in females was falling (19.4%), while between males it was road traffic accidents (29.6%). Falling was the primary cause of THI in the age groups below six years old (24.4%) followed by the age group between six and 12 years old (10.7%). RTA was the major cause in the remaining age groups. The relation between work and level of education to the cause of THI goes in harmony with the result showing the relation between

age and cause of trauma. The most common cause of THI in non-working children was falling (36.5%) while the most common cause of THI in all working groups and non-working adults was RTA (Non-working (adult): 3.3%; worker: 4.8%; driver: 1.5%; farmer: 1.0%; employee: 1.4%; others: 2.9%). Likely, the most common cause of THI between uneducated and those achieving primary education was falling (26.7% and 13.1% respectively) on the other hand the most frequent cause of THI between people achieving secondary and tertiary education levels was RTA (8.8% and 5.7% respectively).

Table 5 shows a highly significant relation between the cause of trauma and severity of head injury, type of fracture, and site of fracture as P<0.001. Most cases had mild injury (GCS>11), fewer cases had moderate injury (GCS 8-11), and smallest number had severe injury (GCS<8) in relation to all causes of head trauma. Fissure fracture was the most frequent fracture type occurring from different causes of fractures. As regards the site of fracture, parietal and frontal areas were the most frequent sites in cases of falling from height, hitting hard object, and assaults, while basal fractures were the most prevalent in case of RTA.

Clinical outcome had a highly significant relationship with the Severity of head injury as P<0.001 (table 6). Cases with complicated outcome had GCS of moderate to severe degree (GCS ≤11) on admission while small number had GCS >11. The majority of cases which ended with complete recovery showed mild degree of head trauma (GCS >11) on admission, while fewer numbers had moderate to severe degree of head trauma. Clinical outcome was also significantly influenced by the radiological presentation of the case. While isolated skull fracture was the most common finding in radiograph in both complicated outcome group and complete recovery group, the greater percent of complicated cases (9.1%) presented with compound depressed fracture, and fissure fracture was the most frequent type of fracture in the complete recovery group (48.2%) (table 6).

Table (1): Frequency and percentage of sociodemographic characteristics of the studied THI cases (No. = 581).

Age (years)	**Mean ± SD**	**Range**
	17.2 ± 16.5	<1 – 85
	Frequency	**Percentage**
Age		
Group 1 (< 6 years)	184	31.7%
Group 2 (6 -<12 years)	111	19.1%
Group 3 (12-<18years)	69	11.9%
Group 4 (18-<40years)	149	25.6%
Group 5 (40-<60years)	49	8.4%
Group 6 (≥ 60 years)	19	3.3%
Gender		
Male	422	72.6%
Female	159	27.4%
Residence		
Rural	409	70.4%
Urban	172	29.6%
Occupation		
Non-working (child)	309	53.2 %
Non-working (adult)	52	9 %
Student	75	12.9 %
Worker	63	10.8 %
Driver	27	4.6 %
Farmer	16	2.8 %
Employee	14	2.4 %
Others	25	4.3 %
Education level		
No formal	247	42.5%
Primary level	169	29.1%
Secondary level	107	18.4%
Tertiary level	58	10.0%

THI: Traumatic head injury, No.: number, SD: standard deviation.

Table (2): Frequency and percentage of medicolegal characteristics of THI in the studied cases (No.= 581).

	Frequency	Percentage
Manner of trauma		
Accidental	491	84.5%
Homicidal	90	15.5%
Type of instrument		
Blunt	570	98.1 %
Sharp	11	1.9 %
Cause of trauma		
Falling	257	44.2%
Road traffic accident (RTA)	195	33.6%
Assault	90	15.5%
Hitting hard object (HHO)	39	6.7%
Site of trauma		
Parietal	236	40.6%
Frontal	180	31 %
Occipital	97	16.7%
Temporal	18	3.1%
Multiple	50	8.6%

THI: Traumatic head injury, No.: number.

Table (3): Frequency and percentage of clinical and radiological signs of THI in the studied cases (No. = 581).

	Frequency	Percentage
Clinical signs		
Scalp wound	338	58.2%
Concussion	381	65.6 %
Compression	105	18.1 %
Neurological deficit	19	3.3%
Severity of head injury (GCS)		
Mild	428	73.7%
Moderate	124	21.3%
Severe	29	5%
Radiological findings		
Fracture	255	43.9 %
Hemorrhage	84	14.5 %
Edema	4	0.7 %
mixed	128	22 %
Free	110	18.9 %
Fractures (No= 382 cases, 65.7%)		
Number of fractures		
Single	349	60 %
Multiple	33	5.7%
Type of fracture		
Fissure	284	48.9%
Compound depressed	62	10.7%
Simple depressed	30	5.2%
Multiple types	6	1%
Site of fracture		
Parietal	125	21.5%
Frontal	96	16.5%
Basal	57	9.8%
Occipital	51	8.8%
Temporal	19	3.3%
Extended	13	2.2%
Multiple	21	3.6%

Table (3): Continued

Contusion and Hemorrhage (No.=185 cases, 31.8%)		
Type of hemorrhage		
Contusion	81	13.9%
Extradural hemorrhage	77	13.3%
Subdural hemorrhage	10	1.7%
Intracranial hemorrhage	4	0.7%
Subarachnoid hemorrhage	3	0.5%
Mixed	10	1.7%
Site of hemorrhage		
Parietal	84	14.4%
Frontal	47	8.1%
Temporal	29	5%
Occipital	10	1.7%
Multiple	15	2.6%

THI: Traumatic head injury, No.: number, GCS: Glasgow coma scale.

Table (4): The relation between different causes of trauma and socio-demographic characteristics (No.=581cases) (frequency, percentage and chi-square).

	Cause of trauma				X^2 (p-value)
	Falling Frequency (%)	**RTA** Frequency (%)	**HHO** Frequency (%)	**Assault** Frequency (%)	
Gender					
Male	144 (24.8%)	172 (29.6%)	29 (5.0%)	77 (13.3%)	67.044 (<0.001**)
Female	113 (19.4%)	23 (4.0%)	10 (1.7%)	13 (2.2%)	
Age groups					
Group 1 (< 6 years)	142 (24.4%)	26 (4.5%)	14 (2.4%)	2 (0.3%)	2.226 (<0.001**)
Group 2 (6 -<12 years)	62 (10.7%)	39 (6.7%)	9 (1.5%)	1 (0.2%)	
Group 3 (12-<18years)	17 (2.9%)	33 (5.7%)	6 (1.0%)	13 (2.2%)	
Group 4 (18-<40years)	23 (4.0%)	71 (12.2%)	6 (1.0%)	49 (8.4%)	
Group 5 (40-<60years)	7 (1.2%)	18 (3.1%)	4 (0.7%)	20 (3.4%)	
Group 6 (≥ 60 years)	6 (1.0%)	8 (1.4%)	0 (0.0%)	5 (0.9%)	
Residence					
Rural	169 (29.1%)	139 (23.9%)	29 (5.0%)	72 (12.4%)	7.003 (0.072)
Urban	88 (15.1%)	56 (9.6%)	10 (1.7%)	18 (3.1%)	
Occupation					
Child	212 (36.5%)	70 (12.0%)	24 (4.1%)	3 (0.5%)	2.407 (<0.001**)
Non-working (adult)	12 (2.1%)	19 (3.3%)	1 (0.2%)	20 (3.4%)	
Student	14 (2.4%)	38 (6.5%)	7 (1.2%)	16 (2.8%)	
Worker	10 (1.7%)	28 (4.8%)	3 (0.5%)	22 (3.8%)	
Driver	1 (0.2%)	9 (1.5%)	1 (0.2%)	16 (2.8%)	
Farmer	4 (0.7%)	6 (1.0%)	1 (0.2%)	5 (0.9%)	
Employee	3 (0.5%)	8 (1.4%)	0 (0.0%)	3 (0.5%)	
Others	1 (0.2%)	17 (2.9%)	2 (0.3%)	5 (0.9%)	
Level of education					
No formal	155 (26.7%)	49 (8.4%)	18 (3.1%)	25 (4.3%)	1.162 (<0.001**)
Primary	76 (13.1%)	62 (10.7%)	14 (2.4%)	17 (2.9%)	
Secondary	16 (2.8%)	51 (8.8%)	3 (0.5%)	37 (6.4%)	
Tertiary	10 (1.7%)	33 (5.7%)	4 (0.7%)	11 (1.9%)	

*No.= number, RTA=road traffic accident, HHO=hitting hard object, X^2= Chi-square test, ** Highly significant (p-value <0.001).*

Table (5): The relation between different causes of trauma and degree of severity, type of fracture, and site of fracture (No.=581cases) (frequency, percentage and chi-square).

	Cause of trauma				X^2 (p-value)
	Falling Frequency (%)	**RTA** Frequency (%)	**HHO** Frequency (%)	**Assault** Frequency (%)	
Severity of head injury					
Mild	220 (37.9%)	132 (22.7%)	27 (4.6%)	49 (8.4%)	48.97 (<0.001**)
Moderate	33 (5.7%)	45 (7.7%)	12 (2.1%)	34 (5.9%)	
Severe	4 (0.7%)	18 (3.1%)	0 (0%)	7 (1.2%)	
Type of fracture					
Fissure	148 (25.5%)	85 (14.6%)	21 (3.6%)	30 (5.2%)	56.143 (<0.001**)
Compound depressed	20 (3.4%)	16 (2.8%)	7 (1.2%)	19 (3.3%)	
Simple depressed	13 (2.2%)	6 (1.0%)	7 (1.2%)	4 (0.7%)	
Multiple types	4 (0.7%)	1 (0.2%)	0 (0%)	1 (0.2%)	
Free	72 (12.4%)	87 (15.0%)	4 (0.7%)	36 (6.2%)	
Site of fracture					
Parietal	67 (11.5%)	23 (4%)	15 (2.6%)	20 (3.4%)	59.78 (<0.001**)
Frontal	42 (7.2%)	24 (4.1%)	10 (1.7%)	20 (3.4%)	
Skull base	24 (4.1%)	29 (5%)	3 (0.5%)	1 (0.2%)	
Occipital	27 (4.6%)	15 (2.6%)	5 (0.9%)	4 (0.7%)	
Temporal	8 (1.4%)	5 (0.9%)	2 (0.3%)	4 (0.7%)	
Extended	6 (1%)	6 (1%)	0 (0%)	1 (0.2%)	
Multiple	11 (1.9%)	6 (1%)	0 (0%)	4 (0.7%)	
Free	72 (12.4%)	87 (15%)	4 (0.7%)	36 (6.2%)	

No.= number, RTA=road traffic accident, HHO=hitting hard object, X^2= Chi-square test, **Highly significant (p-value <0.001).

Table (6): The relation between outcome (complicated and recovered) of THI and severity of head injury and different radiological findings on admission (N=581 cases) (frequency, percentage and chi-square).

	Outcome		X^2 (p-value)
	Complicated outcome Frequency (%)	**Complete recovery** Frequency (%)	
Severity of head injury (GCS)			
Mild	7 (1.2%)	421 (72.5%)	2.08 (<0.001**)
Moderate	57 (9.8%)	67 (11.5%)	
Severe	17 (2.9%)	12 (2.1%)	
Radiological finding			
Fracture	53 (9.1%)	202 (34.8%)	34.4 (<0.001**)
Hemorrhage	7 (1.2%)	77 (13.3%)	
Edema	2 (0.3%)	2 (0.3%)	
mixed	19 (3.3%)	109 (18.8%)	
Free	0 (0%)	110 (18.9%)	
Type of fracture			
Fissure	4 (.7%)	280 (48.2%)	3.4 (<0.001**)
Compound depressed	53 (9.1%)	9 (1.5%)	
Simple depressed	12 (2.1%)	18 (3.1%)	
Multiple types	3 (.5%)	3 (.5%)	

THI= Traumatic head injury, No.= number, RTA=road traffic accident, HHO=hitting hard object, X^2= Chi-square test, **Highly significant (p-value<0.001).

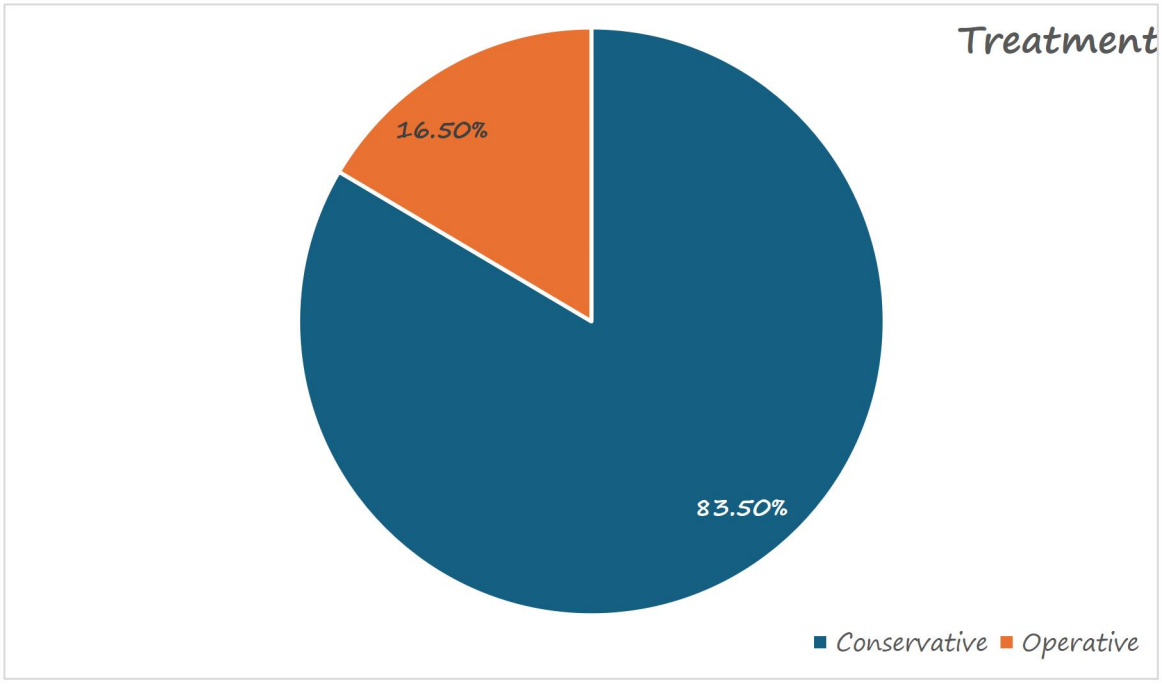

Figure (1): Percentage of cases that received either conservative or operative treatment.

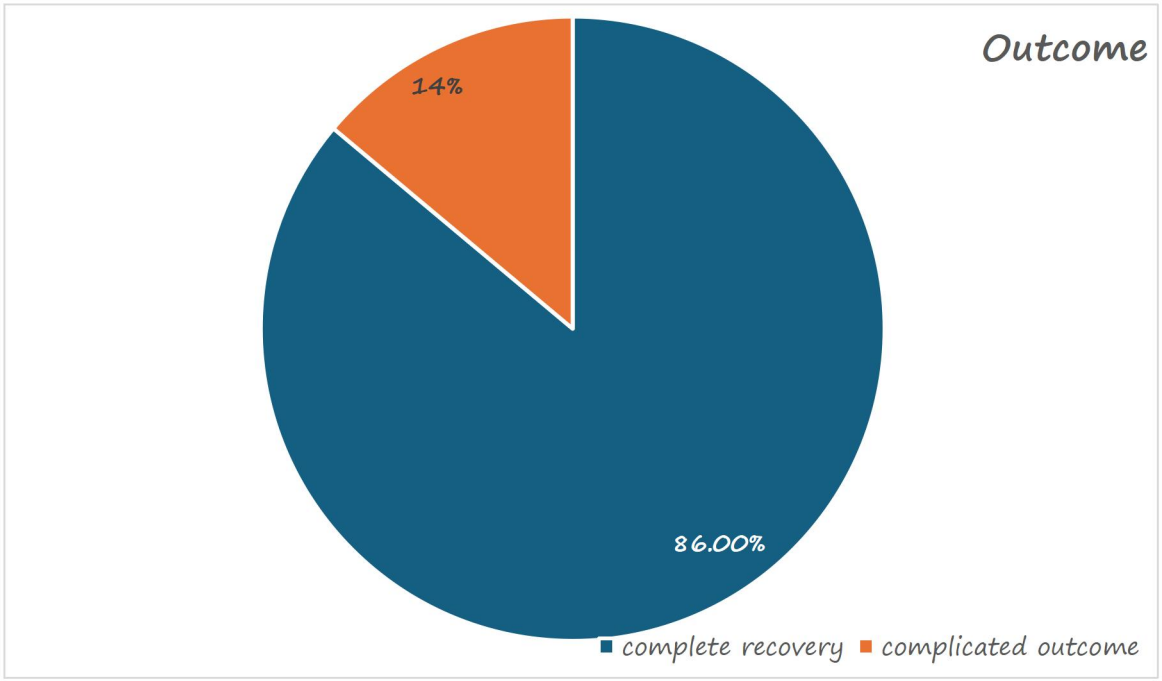

Figure (2): Distribution of cases according to the outcome of THI

Discussion

Head injuries (HI) pose a serious concern to public health since they are a major cause of death for people worldwide in all age categories (Wang et al., 2018). According to the World Health Organization's (WHO) estimate of the global burden of injury, injuries are among the top ten causes of mortality globally. Among them, traumatic brain injury (TBI) is the most prevalent cause of death and disability, accounting for almost 30 percent of all injury-related deaths (Haagsma et al., 2016, Maas et al., 2017).

The current prospective study is targeted to highlight the patterns and consequences of THI at Sohag University Hospital. In the present study, 610 cases of traumatic head injury (THI) presented to neurosurgery department at Sohag University Hospital, during the period from July 1, 2022, to the end of December 2022, from which 581 cases were included.

As regard the age distribution of THI cases, the highest incidence was present in the age group <6 years while those over 60 years old accounted for the least percentage of all cases, which is consistent with the result of the study of Refaat et al. (2019). Other studies reported that the age group most frequently affected are young individuals in active age groups which is the 2nd

higher incidence group in our study (age group 18-40 years) (Maas et al., 2008, Taha and Barakat, 2016, Maas et al., 2017, El-Farouny, 2021). Children are more likely to contract THI due to their bigger head-to-body weight ratio while active young individuals are also at risk due to increased outdoor activity. Elderly people are at a lower risk of THI because they are more likely to stay indoors (Halldorsson et al., 2007).

The current study revealed that males had a three-fold higher likelihood of experiencing head injury compared to females, which is consistent with previous research conducted in Egypt and other countries (Taha and Barakat, 2016, Hassan et al., 2017, Walle et al., 2018). This gender disparity may be attributed to the fact that males are more frequently engaged in outdoor work, which exposes them to a higher risk of road traffic accidents, physical altercations, and injuries. Also, they are more likely to choose manual labor or heavy equipment-related jobs. Additionally, men are more likely to encounter stressful situations that can lead to violent behavior and participate in contact sports like football, karate, boxing, and so on. Comparatively, women usually stay at home.

The study conducted revealed that 70% of THI cases were from rural areas, with the remaining 30% being from urban areas. This finding is comparable to that reported by El-Farouny (2021) in Egypt, Menoufia. Individuals living in rural areas are more susceptible to THI due to their occupation and exposure to traumatic hazards.

The most affected group in the present study was non-working children. In contrast, El-Farouny (2021) found that laborers and students were the most affected group, while the below-school age group had the lowest incidence. As regards educational level, the present study showed that 42.5% of cases had no formal education. This agrees with the study done by Shekhar et al. (2015), in which cases with no formal education represent 44.75% while graduate cases represent 12.01%. This distribution is related to the age distribution between the studied populations where more than 30% of the cases were below six years old.

In terms of the manner of trauma, the current study demonstrated that accidental head injuries accounted for 84.5% of cases, while homicidal injuries made up 15.5% and no suicidal cases which is consistent with previous study conducted by Refaat et al. (2019). The occurrence of head injuries resulting from homicide may be attributed to factors such as high population density, poverty, unemployment, crime. Suicide by head trauma was found to be less common due to the availability of alternate techniques that lead to more rapid loss of consciousness, such as poisoning or hanging (Patil and Vaz, 2010).

According to the current study, THI is predominantly caused by blunt trauma (98.1%), while sharp trauma accounts for only 1.9% of cases. This finding aligns with previous research conducted by Saleh et al. (2022). According to Ghangale et al. (2003), this could be because blunt trauma techniques vary widely. Falling from heights is the leading cause of THI, accounting for 44.2% of cases, followed by RTA (33.6%) and assaults (15.5%). This finding is consistent with previous study conducted by Shekhar et al. (2015) in India.

The current study showed that the parietal region is the most prevalent site for THI, followed by the frontal region. A study by Saleh et al. (2022) reported that temporo-parietal areas were the most prone to head trauma. According to El-Farouny (2021) and Refaat et al. (2019), cranial vault was the most commonly damaged.

The present study also revealed that scalp injuries were present in 58.2% of cases; Wang et al. (2018) reported a similar rate of 57.48%. Yattoo and Tabish (2008) proposed a number of possible causes for this high incidence, including the force of impact, the limited musculature of the scalp, the victim's velocity or fall to the ground, and the loose areolar tissue beneath the scalp that allows blood deposition. Refaat et al. (2019) found a lower incidence of scalp injuries at just 18.4%, which contrasts with our findings.

Many cases (65.6%) reported symptoms of concussion, while much smaller number of cases suffered from either compression (18.1%) or neurological deficits such as hemiplegia and quadriplegia (3.3%). Elsayed et al., (2021) research indicated that concussion was the most common type of head injury, accounting for 40%. Saleh et al. (2022) study, which included moderate and severe traumatic head injuries, found that approximately 76% of cases exhibited signs of lateralization.

Based on GCS ratings, mild cases accounted for most cases (73.7 %), with moderate and severe cases following in order of severity. This result is similar to research conducted by Qureshi et al., (2013), Eshete and Taye (2018), and Refaat et al. (2019).

Parietal bone and frontal bone were the most common sites for skull fractures in the present study. These results are in accordance with those of Honnungar et al. (2011) and Tandle and Keoliya (2011). Fissure fractures accounted for the majority of fractures, which is consistent with the results reported by Pate et al. (2017) and Azher et al. (2017).

The findings of the current study found that parietal region was the most frequent site of intracranial hemorrhage. Brain contusions, and extradural hematoma were the most frequent types of intracranial hemorrhage. El-Farouny (2021) and Refaat et al. (2019) also reported extradural hematoma as the most common radiological finding in cases of head injury. The increased frequency of epidural hemorrhage and fissure fractures may be due to blunt force trauma affecting primarily the parietal and temporal areas, leading to the tearing of blood vessels in the epidural space (Chattopadhyay and Tripathi, 2010).

In terms of treatment, 83.5% received conservative treatment, while a smaller percentage (16.5%) required surgical intervention. Refaat et al. (2019) also found that most cases only needed conservative treatment, which could be attributed to the fact that the studied cases were mild and did not require surgery. These results were in concordance with research done by Patil and Vaz (2010).

As for outcomes, the present study revealed that 86% of cases experienced complete recovery, and 14%

of cases ended with death or permanent infirmity. In accordance with our findings, research of Umeranı et al. (2014), Refaat et al. (2019) and El-Farouny (2021) revealed a greater prevalence of complete recovery.

Conclusion

Head trauma is one of the most frequent injuries at Sohag University Hospital. The results of the current study showed that the most often occurring sociodemographic characteristics linked to THI were being a male, being younger than six, and residing in a rural location. The primary cause of THI was falling, with fissure fractures being the most prevalent pattern mainly affecting parietal bone. Most patients had minor traumatic head injuries which were treated conservatively and experienced a good recovery.

Recommendations

Since THI patterns can fluctuate at any time, it's critical to regularly look at the various patterns and causes to create the best strategy of action. Multicenter studies in other governorates throughout Egypt could provide valuable insights into the epidemiology of THI.

The results of this study indicate that children should get extra care because falls from heights are the most common cause of THI. There should be awareness programs in several areas of the Sohag governorate to increase public knowledge of the seriousness of brain injuries.

Seeking prompt medical attention, rapid transportation, receiving treatment quickly, and having easy access to backup services such critical care units, all are factors that contribute to better outcomes for THI.

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بعض الجوانب الطبية الشرعية لإصابات الرأس الواردة الي قسم جراحة المخ و الأعصاب بمستشفيات سوهاج الجامعية

أسماء محمد خلف أحمد [1] ، مها عبدالحميد هلال [1], بهاء غريب علاءالدين[2] , نجلاء جابر أحمد دياب[1] , رشا الحداد علي موسى[1]

الملخص العربي

الخلفية: إصابات الرأس هي أحد أهم أسباب الوفيات في جميع أنحاء العالم. هدفت هذه الدراسة إلى استكشاف الجوانب الطبية الشرعية ونمط انتشار اصابات الرأس فى الحالات الواردة إلى قسم جراحة المخ والأعصاب في مستشفى جامعة سوهاج.

المنهجية: هذه دراسة مقطعية مستقبلية شملت 581 حالة تم دخولها الى قسم جراحة المخ والأعصاب في مستشفى جامعة سوهاج في الفترة من يونيو إلى ديسمبر 2022. البيانات التي تم جمعها من المرضى هي: البيانات الاجتماعية والديموغرافية، بيانات عن الإصابة، الأعراض السريرية، نتائج الأشعة التشخيصية، العلاج، والنتيجة.

النتائج: أظهرت النتائج أن الفئة العمرية الأكثر تأثراً هي الأطفال دون سن السادسة. وشكل الذكور 72.6% من الحالات. 84.5% من صدمات الرأس كانت عرضية؛ وكان السقوط هو السبب الأكثر شيوعاً (44.2%). كانت شدة الاصابة فى معظم الحالات خفيفة (73.7%). و كانت أكثر نتائج الأشعة شيوعًا هي الكسر الشقى (48.9٪)، وكان الموقع الأكثر عرضة هو العظم الجداري (21.5٪). وتم التعامل مع معظم الحالات بالعلاج التحفظى. وشهد العدد الأكبر من الحالات تعافياً جيداً.

الاستنتاج: خلصت الدراسة الحالية إلى أن اصابات الرأس كانت أكثر شيوعا فى الذكور من المناطق الريفية الذين تقل أعمارهم عن ستة أعوام، وكان السبب الأكثر شيوعاً هو السقوط. كانت كسور العظام الجدارية هي العرض الأكثر شيوعًا. كانت أغلب الحالات تعاني من أعراض خفيفة و آلت معظمها إلى الشفاء التام.

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