ORIGINAL ARTICLE

Spectrum of Head Trauma at Tertiary Care Military Hospital CMH Quetta, Pakistan

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ABSTRACT

Objective: *The objective of this study was to determine the etiological spectrum, injury patterns and outcome of head injured patients at tertiary care military hospital CMH Quetta.*

Materials and Methods: *This descriptive study includes all patients of head trauma coming to trauma centre at CMH Quetta, Pakistan. Patients with associated injuries of other organs were excluded from the study. We noted the detailed clinical history and examination, demographics, mechanism of injury, treatment offered (operative / non operative) and analyzed the details of operative procedure (craniotomy, craniectomy, elevation of compound depressed fracture, scalp suturing), morbidity and outcome (according to Glasgow outcome scale). Data was analyzed using SPSS version 16.*

Results: *There were 1026 patients (856 males and 170 females) eligible to be included in the study. The mean age of the patient was 28.9 ± 19.2 years SD. Majority of the patients belonged to the age group 21 – 40 years. The commonest cause of head injury was Road traffic accident 507 (49.41%), fall 273 (26.6%), gunshot wound 97 (9.45%), bomb blast injury 76 (7.41%), sports related 35 (3.41%), mine blast 25 (2.44%) and splinter injury 13 (1.27%) of patients. CT Brain findings were contusions in 116 (11.3%), isolated fractures in 45 (4.38%), SDH in 44 (4.28%), EDH in 43 (4.19%), DAI (diffuse axonal injury) in 36 (3.51%), compound depressed fractures in 16 (1.55%), frontal sinus fractures in 14 (1.36%), combined EDH / SDH in 6 (0.58%) and normal CT brain findings in 706 (68.81%) patients. 662 (64.52%%) patients were managed conservatively and 364 (35.47%) underwent operative management. Major operations (craniotomy / craniectomy / elevation of compound depressed skull fracture) were performed in 138 (13.45%) and minor operations (suturing of scalp laceration) were performed in 226 (22.03%). Good recovery was seen in 894 (87.13%), moderate disability in 26 (2.53%) and severe disability in 12 (1.16%) whereas 16 (1.56 %) patients remained vegetative. The mortality was 78 (7.6%).*

Conclusion: *In Pakistan, head injury contributes significantly to mortality and morbidity. Road traffic accident, history of fall and gunshot are the commonest causes of head injury. Appropriate medical care facilities needs to be established at district and tehsil level to provide prompt and adequate care to head injured patients.*

INTRODUCTION

Head injury remains an important factor in the cause of death and disability after trauma. Most head injury deaths occur in those presenting in coma. Traumatic brain injury is a major cause of death and disability worldwide, especially in children and young adults. Causes include falls, vehicle accidents, and violence.[1,2] Brain trauma can be caused by a direct impact or by acceleration alone. Head injury cause a host of physical, cognitive, social, emotional, and behavioral effects and the outcome can range from complete recovery to permanent disability or death.[3-5]

Brain injuries can be classified into mild, moderate, and severe categories. The Glasgow coma scale (GCS) is most commonly used system for classifying head injuries. Severe head injury is associated with high mortality and morbidity.[6-8] In spite of best management 15 – 20% of head injuries prove fatal. The majority of patients require conservative management and only 10 – 20% of patients need surgical intervene-

tion.[9-11]

The importance of protecting the head from injury is gaining wider recognition. Firm preventive efforts will clearly be effective in reducing the incidence of serious head injuries and their complications.[12,13] The objective of this study was to determine the etiological spectrum, injury patterns and outcome of head injuries in our setting.

MATERIALS AND METHODS

All head injury patients who presented to trauma centre of CMH Quetta, Pakistan during the study period were included in the study. Patients who died before the initial assessment and those with other associated injuries were excluded from the study. Head injury was defined as both blunt and penetrating injuries affecting the cranium and its contents.

All study patients were first resuscitated in the trauma centre according to advanced trauma life support. From trauma centre patients were taken into the neurosurgical wards or the intensive care unit (ICU) from where baseline investigations were completed and further treatment instituted. A complete history taken and a neurological assessment were performed on each patient. The severity of head injury was assessed using Glasgow Coma scale (GCS) taken on admission CT scan of brain was performed in all patients. Depending upon the type of injury, the patients were treated either conservatively (i.e. neuro-observation, antibiotics, anti-epileptics etc) or by surgery (i.e. craniectomy, craniotomy, wound debridement, elevation of compound depressed fracture, suturing of scalp laceration). The outcome of patients at 3 months after injury was assessed according to the Glasgow outcome scale (GCS) and categorized as: (1) death (2) persistent vegetative state (3) severe disability (conscious but disabled) (4) moderate disability (disabled but independent) and (5) good recovery. A score of 4 or 5 was considered a favorable outcome (moderate disability or less) and a score 1 to 3 was considered unfavorable (severe disability or death). The data was analyzed using SPSS version 16 with the help of statistician.

RESULTS

The total number of patients admitted in trauma centre during the study period was 1026. The age of the patients varied from 1month to 65 years, with a mean age of 28 ± 1.2 years SD. Majority of the patients belonged to age group 20 – 40 years. The overall male to female ratio was 3:1.

Road traffic accidents 492 (47.95%) were the commonest cause of head trauma in our patients followed by fall 260 (25.34%). The mechanism of injury is shown in Table 1.

Table 1: *Causes of Head Injury.*

Cause	Number of Patients	Percentages
Road traffic accident	507	49.41
History of fall	273	26.61
Gunshot wound	97	9.45
Bomb blast injury	76	7.41
Sport related injury	35	3.41
Mine blast	25	2.44
Splinter injury	13	1.27

CT Brain findings were contusions in 116(11.3%), EDH in 42 (4.09%), SDH in 44 (4.28%), combined EDH/SDH in 6 (0.58%), compound depressed fractures in 16 (1.55%), the details given in Table 2.

Table 2: *CT Brain Findings.*

CT Findings	Number of Patients	Percentages
Contusion	116	11.31
Isolated fracture	45	4.38
Subdural hematoma	44	4.29
Epidural hematoma	43	4.19
Diffuse axonal injury	36	3.51
Compound depressed skull fracture	16	1.56
Frontal sinus fracture	14	1.36
EDH / SDH combined	6	0.58
Normal study	706	68.81

Major operations (craniotomy / craniectomy/ elevation of complete depressed fracture) were performed in 138 (13.45%) and minor operations (suturing of scalp laceration) were performed in 226 (22.03%).

Good recovery was seen in 894 (87.13%), moderate disability in 26 (2.53%) and severe disability in 12 (1.16%) whereas 16 (1.56 %) patients remained vegetative. The mortality was 78 (7.6%).

DISCUSSION

Globally, head injuries remain an important public health problem and contribute significantly to high morbidity, mortality and long term disability.[14] The majority of patients in our study were young adults with males outnumbering females. These findings are comparable with previous studies which reported overall ratios of males to females to range from 3:1 to as high as 11.1: 1.[15] This group represents economically active age and therefore their risk prone activities to earn for their families.

Road traffic accidents (RTAs) are the commonest cause of head trauma globally as supported by present our study.[16] This may be attributed to poor training of drivers, inadequate maintenance of vehicles and disregard for traffic laws. The negligible use of helmet in this region is also a contributing factor to increased incidence of RTAs.[17] Falls is the second commonest cause of head injury and tends to affect extremes of age, as in our study.[18] The third commonest cause is GSW (gunshot wound) and bomb blast injuries due to increased interpersonal violence and terrorism.

Majority of patients in our study were brought by persons not trained for handling trauma patients. Similar observations have been noted in Kenya and Tanzania.[17]

The management of patients with head injuries has several important components; adequate pre-hospital care, rapid transportation to specialized centre by trained trauma personal, complex in-hospital care and rehabilitation,[7,9] which are lacking in our system leading to increased morbidity and mortality of head trauma patients.

With the widespread availability of CT scan, it was the investigation of choice in all head trauma patients in our study. The most common CT scan finding in our study was cerebral contusions followed by SDH, isolated vault fractures and EDH respectively. Yatoo GH showed similar results.[19]

Majority of our patients were treated conservatively as supported by other studies.[20] The most common procedure in our study was primary suturing of scalp laceration followed by craniotomy. Agrawal A reported the same pattern of procedures in his study.[16]

Majority of patients in this study had good recovery as in other studies.[21] This observation can be explained due to high incidence of mild head injuries in our study. The mortality rate was 7.6% in our study which is comparable to other studies.[14,18]

CONCLUSION

In Pakistan, head injury contributes significantly to mortality and morbidity. Road traffic accident, history of fall and gunshot are the commonest causes of head injury. Appropriate medical care facilities needs to be established at district and tehsil level to provide prompt and adequate care to head injured patients.

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