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Nasal/maxillofacial manifestations of head and neck injury

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ABSTRACT

Background: A great deal of work has been directed toward using these symptoms to classify the severity of head injury. Loss of consciousness or coma and posttraumatic amnesia (difficulty in remembering new information after waking up from the coma) are the two most common symptoms used. A mild head injury is one in which the period of unconsciousness is less than twenty minutes and post traumatic amnesia lasts for less than one hour, while a head injury in which the person is unconscious for at least one day and experiences post traumatic amnesia for more than twenty four hours is considered severe.
Methods: 50 Cases coming to O.P.D and casualty of Chigateri general hospital and Bapuji hospital attached to JJM Medical College, Davangere were studied.
Results: Evidence of C.S.F rhinorrhoea was noticed in 1(2%) case which managed conservatively. Maxillary fracture was noticed in 05 (10%) cases which were managed conservatively. Zygomatic fractures were noticed in 07 (14%) cases which were managed by open reduction and internal fixation with mini plates under general anesthesia.
Conclusions: Mandibular fractures were noticed in 10 (20%) of cases which were managed by open reduction and internal fixation with mini plates under general anesthesia.

Keywords: Maxillary fracture, Zygomatic fractures, Head injury

INTRODUCTION

Because of high-speed travel man faces an uncontrolled and mounting epidemic of severe injuries and death due to trauma. When the head is severely injured the ear is one of the most frequently damaged sensory organs. Even though the otolaryngologist is not the first person required for maintenance of life which is the demanding concern immediately following head injuries, his part to correct the sequela of head injuries is immense and important.[1]

Sequela following head injuries like ossicular dislocation, perilymph fistulae, CSF leak, and facial nerve injuries need timely intervention of the otolaryngologist. Fractures of the nose, mandible and middle third of the facial skeleton are most commonly the result of road transport accidents, attempted suicide or physical combat. In children, falls, accidents while playing and sports injuries are major causes of facial fractures.[2]

Injuries involving some type of blow to the head are among the most common in our society. Head injuries can range from relatively minor damage to the scalp and face such as lacerations, abrasions and bruising to more serious consequences involving damage to the brain. While traumatic brain Injury occurs less frequently, it is important to know how it is identified and what to do for the person.[3]

Loss of consciousness, even for a very brief period, is one of the clearest indications that the brain may have been affected by a blow to the head. A confusional state involving uncertainty about time, date and location and/or a period of memory loss for the events surrounding the head injury are also indicators of trauma to the brain. Any of these symptoms following a blow to the head should be taken seriously.[4]

With the most severe symptoms, loss of consciousness for more than a few minutes, the person should receive immediate medical attention. With less severe symptoms the person should be watched for a period of several hours after the head trauma. The person's state of consciousness, orientation to time and place and immediate memory function (e.g., remembering a series of four numbers) should be evaluated periodically during this time. Any evidence of deterioration may be a sign of the delayed effects of brain injury due to swelling or internal bleeding and require that the person receive medical attention as soon as possible. Some appreciation for how and why these symptoms arise will provide insight into why even a seemingly mild blow to the head may have very serious and potentially life-threatening consequences.[5]

The effects of a blow to the head on brain function arise from the structural characteristics of the skull and the brain and the direction and size of the forces acting on the head. Three membrane layers cover the brain a rather soft tissue with the consistency somewhere between egg white and jelly. The outer-most layer, called the duramater, is connected to the inside of the skull at various suture points that serve to suspend the brain within the skull. The brain sits atop the brain stem, an extension of tire spinal cord, which passes out of the base of the skull through a hole, called the foramen magnum. Brain injuries arise from these characteristics of this brain-skull anatomy, the rigidity and internal contours of the skull, the incompressibility of brain tissue and the susceptibility of the brain to shearing forces.[6]

A great deal of work has been directed toward using these symptoms to classify the severity of head injury. Loss of consciousness or coma and posttraumatic amnesia (difficulty in remembering new information after waking up from the coma) are the two most common symptoms used. A mild head injury is one in which the period of unconsciousness is less than twenty minutes and post traumatic amnesia lasts for less than one hour, while a head injury in which the person is unconscious for at least one day and experiences post traumatic amnesia for more than twenty four hours is considered severe.[7]

The severity of head injury can also be indexed on the basis of neurological and neuro-radiological tests. Increased reflexes and muscle tone (e.g spasticity), abnormal movements (e.g. tremors), difficulty in swallowing and slurring of speech are all indicators on a neurological examination or a moderate to severe head injury. Findings from neuro-radiological tests using computer-assisted brain scans have proven useful in visualizing the damage caused to the brain. Computerized Axial tomography (CAT) and- Magnetic Resonance Imaging (MRI) provide scans of the structural integrity of the brain and may reveal physical changes such as hematomas and diffuse axonal injuries. Positron emission Tomography examines brain function as opposed to structure and provides a view of more subtle effects of trauma to the brain, which might not be seen by the CAT or MRI scans.

Attempts have also been made to predict the outcome for persons who have suffered a head injury and to assess the stages in recovery following their emergence from coma. The Glasgow Coma Scale is one of the most widely used scales for describing the severity of head injury and predicting the person's likelihood of recovery, this scale rates the severity of person's injury based on his/her ability to open his/her eyes, move and speak. The more severe the injury the lower is the performance as reflected in the score on the scale. A very low score suggests a very severe injury and little likelihood of total recovery.[8]

METHODS

Source of data

Cases coming to O.P.D and casualty of Chigateri General Hospital and Bapuji hospital attached to JJM Medical College, Davangere.

Cases referred from surgical, Orthopaedic and medical units of same institutions.

Period of study: Two year period from November 2012 to October 2014.

Number of cases: 50

Selection criteria

Inclusion criteria were patients of both sexes in all age group with head injury and trauma to ear, nose and throat. Exclusion criteria were patients with serious systemic diseases will be excluded.

Study method

Once the patient presents to us, a detailed history and examination findings are recorded in specifically constructed proforma.

RESULTS

External injury was noticed in 17 cases in the form of abrasion or cut injury over the bridge of nose. Bleeding from the nose was complained by 13 cases constituting 26% of cases. Discharge of clear fluid from the nose was complained by 1 case (2%). Anosmia was complained by1 case (2%) as given in Table 1.

Injury to tongue was noticed in 5 cases. Lip laceration was noticed in 2 patients. External injury was noticed in 17 (34%) cases in the form of abrasion, cut laceration, abrasion over the bridge of nose and cheek. Majority of cases referred to ENT department with history of epistaxis did not have active bleeding except in 2 cases.

Table 1: Nasal/maxillofacial symptoms of head and neck injury.

Symptoms	No. of cases	Percentage
External injury	17	34.00
Bleeding from nose	13	26.00
Nasal obstruction	13	26.00
Discharge from nose	01	02.00
Bleeding from mouth	05	10.00
Anosmia	01	02.00

Out of 10 (20%) nasal bone fractures only 3 had external deformities which were treated by surgical correction under general anesthesia.

Evidence of C.S.F rhinorrhoea was noticed in 1 (2%) case which managed conservatively. Maxillary fracture was noticed in 05 (10%) cases which were managed conservatively. Zygomatic fractures were noticed in 07 (14%) cases which were managed by open reduction and internal fixation with mini plates under general anesthesia.

Mandibular fractures were noticed in 10 (20%) of cases which were managed by open reduction and internal fixation with mini plates under general anesthesia.

Lip laceration was noticed in 3 cases. Tongue laceration was noticed in 1 case (Table 2).

Table 2: Nasal/maxillofacial manifestations of head and neck injury.

Nasal/maxillofacial manifestations	No. of cases	Percentage (WRT only nasal/maxillofacial manifestations following head injury 27cases)	Percentage (WRT ENT manifestations following head and neck injury 50 cases)
External injuries	17	62.96	34.00
Epistaxis	16	59.25	32.00
Nasal bone fracture	10	37.03	20.00
Septal haematoma	01	00.03	02.00
C.S.F Rhinorrhea	01	00.03	02.00
Frontal bone fracture	06	22.22	12.00
Maxillary fracture	05	22.72	10.00
Zygomatic fracture	07	31.81	14.00
Mandibular fracture	10	37.03	20.00
Orbital fracture	01	00.03	02.00
Lip laceration	02	00.07	04.00
Tongue laceration	01	00.03	02.00

Out of 50 cases 2 cases with serious head injury had dilated pupils. 5 cases had sub-conjunctival haemorrhage. Black eye was noticed in 4 cases (Table 3).

Table 3: General signs.

Signs	No. of cases	Percentage
Conjunctival haemorrhage	05	10.00
Black eyes	04	08.00
Dilated pupils	02	04.00
Battle's sign	06	12.00

DISCUSSION

In the study by Gassner et al, a total of 9,543 patients sustained 21,067 cranio-maxillofacial injuries. It was observed that, of the 7061 facial bone fractures, midfacial fractures accounted for 71.5%, mandibular fractures for 24.3%, and supraorbital and frontobasal fractures for 4.2% of the cases.[6]

In the study by Lee et al, of 4-year retrospective study of facial fractures there were 318 patients treated for facial fractures.[7] Of the 318 patients, 253 (79.6%) had a fracture in one anatomical site, 41 (12.9%) in two sites, and 24 (7.5%) in three sites. The total number of fractures was 407. Upper one third, frontal fractures (2%), middle third, nasal (42.5%), zygomatic (15.2%), maxilla (6.1%), orbital (25.6%), lower third, mandibular (7.9%).

In the study by Iida et al, retrospective analysis of 1502 patients with facial fractures, isolated mandibular fractures were most frequent (854 patients, 56.9%), followed by isolated mid face fractures (389 patients, 25.9%). Fractures involving both the mid face and mandible were present in 101 patients (6.7%).[9]

In the study by Shankar et al, of a multicentre retrospective study, 2,027 patients data were analysed retrospectively by age, sex, pattern of fracture related to cause, and treatment given over a period 5 years, from 2000 to 2005. Isolated mandibular fractures were most frequent, seen in 1035 patients (41.7%) followed by isolated mid face fractures in 526 patients (21.2%). Traffic accident related fractures occurred in 1806 patients (72.7%). The largest proportion of traffic accident related injury involved motorcycles (42.3%). The second most common cause of facial fractures was fall from height (14.1%) followed by assault (8.6%).[2]

In the study by Yogana et al of epidemiological profile of otorhinolarygological emergencies, of the 561 cases which were observed in emergency department 48 cases suatained facio-maxillary fractures. Nasal 19 (39.5%), Mandible 19 (39.5%), zygoma+maxilla 7 (14.5%), palate 3 (6.2%).[2]

In our present study, of the 27 cases with nasal/maxillofacial manifestations of the 50 cases studied for of ENT manifestations following head and neck injury. Upper one third, frontal fractures (22.22%), middle third, nasal (37.03%), zygomatic (31.8%), maxilla (22.72%), orbital (01.00%), lower third mandibular (37.03%).

The observations made by our study are more or less comparable with the studies mentioned by above authors. Although there have been certain variations in percentage of certain fractures made by different authors which have been attributed to number of research's from various regions who have reported statistical and clinical studies of facial fractures. The results of those studies show slight differences depending on regional, cultural, social and economic backgrounds.[10-12]

In the study by Miyazaki et al, in patients with head injury, the total incidence of CSF rhinorrhea was 1-3%, and in almost all cases, CSF rhinorrhea occurred within the first three months after injury.[9]

In the study by Stewart et al post-traumatic cerebrospinal fluid (CSF) rhinorrhoea is a well-recognized complication of closed head injury. Most cases occur soon after injury and a delay in presentation of more than 1 month is unusual. A case is reported of CSF rhinorrhoea presenting 15 years after initial trauma which was complicated by meningitis after 12 months.[10]

In the study by et al, leakage of CSF occurs in 2% of all head injuries and 12 to 13% of all the skull base fractures. A total of 27 cases of CSF leakage occurred among 1036 cases of closed head injury.[11] In our study, of the 50cases with head injury we observed 2% cases of CSF rhinorrhoea. This is more or less comparable with the studies done by above authors.

CONCLUSION

Evidence of C.S.F rhinorrhoea was noticed in 1 (2%) case which managed conservatively. Maxillary fracture was noticed in 05 (10%) cases which were managed conservatively. Zygomatic fractures were noticed in 07 (14%) cases which were managed by open reduction and internal fixation with mini plates under general anesthesia.

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REFERENCES

1. Balakiran K, Ravikumar A, Senthil K. Otological Manifestations in Head Injury and their Management. Indian J Otolaryngol Head Neck Surg. 2003;55(1):46-9.
2. Yojana S, Mehta K, Girish M. Epidemiological Profile of Otorhinolaryngological Emergencies in Rural Area of Gujarat. Indian J Otolaryngol Head Neck Surg. 2012;64(3):218-24.
3. Ottaviano G, Marioni G, Marchese-Ragona R, Trevisan CP, de Filippis C, Staffieri A. Anosmia associated with hearing loss and benign positional vertigo after head trauma. Acta Otorhinolaryngologica Italica. 2009;29:270-3.
4. Keel S, Gowardman J. Traumatic Laryngeal Injury in a Nine Year Old Child The Padded Dash' Syndrome Revisited. Critical Care Resuscitation. 2000;2:30-3.
5. Chopra H, Khurana AS, Munjal M, Chopra V, Mehindriata A, Sobti MK. Facial Nerve Paralysis in Head Injury Indian J Otol. 2002;8(2):86-9.
6. Gassner R, Tuli T, Achl OH, Rudisch A, Ulmer H. Cranio-maxillofacial trauma: a 10 year review of 9543 cases with 21,067 Injuries. J Cranio-Maxillofacial Surg. 2003;31:51–61.
7. Lee JH, Cho BK, Park WJ. A 4-year retrospective study of facial fractures on Jeju, Korea. J Cranio Maxillo Facial Surg. 2010;38:192-6.
8. Shankar AN, Shankar VN, Hegde N, Sharma, Prasad R. The pattern of the maxillofacial fractures - A 120 multicentre retrospective study. J Cranio-Maxillo-Facial Surg. 2012;40:675-9.
9. Miyazaki Y, Hashimoto T, Kanki T, Abe S, Nakamura N. A Case of Traumatic CSF Rhinorrhea manifested after ten years. No Shinkei Geka. 1991;19(4):375-8.
10. Stewart BT, Kaye AH. Delayed CSF Rhinorrhea – A Case report. Aust N Z J Surg. 1992;62(10):818-20.
11. Kamochi H, Kusaka G, Ishikawa M, Ishikawa S, Tanaka Y. Late onset cerebrospinal fluid leakage associated with past head injury. Neurol Med Chir (Tokyo). 2013;53:217-20.
12. Bailey Byron J, Johnson Jonas T, Newlands Shawn D. Trauma. Chapter 69-71. Head and Neck surgery and Otorhinolaryngology. Volume 1. 4th edition. Lippincot; 2006: 1609-20, 1631-40, 1664-70.

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