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Original research article

OTOLOGICAL MANIFESTATIONS OF HEAD INJURY: CLINICAL PROFILE

[1]Kulkarni Manik Rao, [2]K Sourabh

[1]Associate Professor, Department of ENT, Vijayanagar Institute of Medical Sciences, Ballari, Karnataka, India

[2]Senior Resident, Department of ENT, Vijayanagar Institute of Medical Sciences, Ballari, Karnataka, India

Corresponding Author:

Kulkarni Manik Rao (dr.manikkulkarni@gmail.com)

Abstract

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. 50 patients selected on simple random selection technique with head injury with ear manifestations, attending to E.N.T. outpatient department, Emergency department and patients referred from other departments over a period of 1 year. Injury to pinna was the most common otological manifestation following head injury present in 34(68%) patients with ear manifestations following head injury followed by injury to EAC which was seen in 28 patients (56%). Temporal bone fracture was noticed in 12 cases (24%) with ear manifestations following head injury. Facial Nerve palsy was seen in 5 patients (10%).CSF otorrhoea was the least common manifestation seen in only 1 patient (2%).

Keywords: Otological manifestations, Head injury, Clinical profile

Introduction

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 [1].

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 [2].

With the most severe symptoms, loss of consciousness for more than a few minutes, the

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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 [3, 4].

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 jello. The outermost 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 [5, 6].

Methodology

A written informed consent was taken from all the patients included in this study. A detailed history, thorough clinical examination and relevant investigations was done for these patients. The data collected was entered into a specially designed case record proforma.

Design of study

A prospective Study.

Sampling technique

50 patients selected on Purposive sampling technique with head injury with ear manifestations, attending to E.N.T. outpatient department, Emergency department and patients referred from other departments over a period of 1 year.

Inclusion Criteria

- Patients of both sexes with head injury and trauma to ear.
- Patients > 5 years of age.
- Patients having a clear history and evidence of ear manifestations following head injury.

Exclusion Criteria

- Comatose patients
- Patients with severe systemic disease.

Evaluation of patients

Detailed history of patient is taken

1. Local examination including detailed examination of ear, nose and throat and head

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and neck.

2. BLOOD: Haemoglobin, Total count, Differential count, Erythrocyte sedimentation rate, bleeding time, clotting time.
3. Pure Tone Audiometry.
4. C-T scan (wherever necessary) plain and contrast studies of skull can detect leak in CSF otorrhoea.
5. Culture and sensitivity of ear discharge to detect the offending organisms when traumatized ear gets infected.

Results

Table 1: Age and Sex Distribution

Age(in years)	Male	Female	Frequency (n=50)	Percentage (%)
5-10	0	0	0	0
11-20	02	0	02	04
21-30	14	01	15	30
31-40	17	01	18	36
41-50	08	01	09	18
51-60	04	01	05	10
61-70	01	0	01	02
Total	46	4	50	100

Males outnumbered the females. Males constituted 92%. Majority of the patients come under the age group of 31-40 constituting 36%. Male Drivers are more common in our country and also Males are more commonly involved in violent activities and same findings have been found in our study.

Table 2: Incidence of ear symptoms following head injury

Symptoms	Right	Left	Both	Total	Percentage
Bleeding from ear	23	14	2	39	78%
Hard of Hearing	20	10	0	30	60%
Tinnitus	11	7	0	18	36%
Giddiness	-	-	-	11	22%
Deviation of angle of mouth	3	3	0	5	10%
Vomiting	-	-	-	10	20%

Vomiting was seen in 10 patients which may be a sequelae of head injury. The most common presenting complaint was bleeding from ear which was seen in 39 patients (78%) followed by hard of hearing (60%).

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Table 3: Ear manifestations following head injury

Ear manifestations	Right	Left	Both	Total	Percentage
Injury to pinna	20	14	0	34	68%
Injury to EAC	19	9	0	28	56%
TM perforation	9	6	0	15	30%
CSF Otorrhoea	1	0	0	1	2%
Facial Nerve palsy	3	3	0	6	12%
Haemotympanum	5	3	0	8	16%
Temporal bone fractures	9	4	0	13	26%

Injury to pinna was the most common otological manifestation following head injury present in 34(68%) patients with ear manifestations following head injury followed by injury to EAC which was seen in 28 patients (56%). Temporal bone fracture was noticed in 12 cases (24%) with ear manifestations following head injury.
Facial Nerve palsy was seen in 5 patients (10%). CSF otorrhoea was the least common manifestation seen in only 1 patient (2%).

Discussion

Head injuries are not only the most common mode of accidental deaths but of morbidity too. The severity of head injuries is reflected in the form of bleeding from the ear, nose, and throat.
During the study period of one year, 50 cases with Ear manifestations in head injury were studied in this case study.
Majority of patients in this study were males, and belonged to the age group of 31-40 years. Vehicular accidents were the most common cause and males predominated than females. In our country, males are more commonly involved in outdoor activities. Males are known to use more vehicles and also known to be involved in violent activities compared to females so are more prone to accidents and injuries.
Assault and fall were the other two types of injuries in which males dominated. Falls were common in the extreme age groups.
In the study by William P Potstic (1987), explained that external ear trauma occurs frequently in all age groups because the auricle has an unprotected position on the head and it is more in vehicular accidents [7].
Templer J, Renner G.J (1990), in their study reported that ear injuries occur in people of all the ages but is predominate in vehicular riders. Forces of moderate intensity cause lacerations or even amputation of pinna [6].
As per K Sharma, S.C. Goswami, D.K. Baruah (2006) was observed that accidental trauma to auricle may result in partial or complete loss of auricle, and requires prompt care and treatment as it carries risk of perichondritis [8].
In our present study it was found that injury to pinna was seen 34 (68%) cases. Injury to pinna was in the form of lacerations, partial or complete loss which was treated by suturing under strict aseptic precautions.

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In the study of Ghorayeb BY, Rafie JJ (1989), out of 2899 blunt head injury cases clinically reported that Battle's sign in 10.6% [9].

Richard M. Jones, MD, Michael I. Rothman MD, (2000) reported 3 (11.11%) patients with battle's sign clinically out of 27 patients of head injury [10].

In our present study it was found that 7 (14%) cases of Battle's sign, out of 50 cases studied. Our observations more or less matches with observation made by above authors.

In the study of Douglas D. Backous, Llyod B. Minor and John K. Nidarko, observed the external auditory canal was injured in 50% cases of head injury with ear manifestations. The damage occurred directly or indirectly by prolapse of TMJ in to EAC [11].

Stelle BD, Brenan PO (2002), reported that 14% had blood in the external auditory canal due to head injury in survey of 111 patients with accidental or internal ear injuries [12].

In our present study, it was found that, out of 50 cases with ear manifestations in head injury observed external auditory canal injury in 28 (56%) cases. Our observation more or less matches with observations made by above authors.

In the studies done by Cannan CR, Jahrsdoerfer RA (1983), this condition occurring in combination with temporal bone fracture in 22% of cases [13].

Rechard M Jones, Micheal I. Rothman, William C. Gray, Gray H. Zoarsk, Douglas E.mattox (2000), revealed 11(40%) patients with haemotympanum out of 27 patients [10].

In our present study, it is observed that 8 cases (16%) of haemotympanum among the 50 cases studied for of ear manifestations following head and neck injury.

The findings of present study are more or less comparable with observations made by above authors.

Traumatic perforation of tympanic membrane was clinically studies by Kuroda R (1993), in 123 ears due to head injury. They observed in 43.72% cases of traumatic perforation of tympanic membrane [14].

In the present study, of the 50 cases studied for of ear manifestations following head and neck injury, there were 15 (30%) cases with tympanic membrane perforation, 6 of which were associated with temporal bone fractures.

In the study of 1,185 patients suffering from head injury conducted by John Raaf, MD, Portland, Ore (1967) showed 79 (6.7%) patients had CSF otorrhoea and drainage stopped spontaneously in 61 patients and the patient's recovered [15].

James R. House and C. Ron Cannon (1994), reported CSF leak in approximately 6% of skull base structures in head injury [16].

In present study, of 50 cases with ear manifestations, none of the cases had CSF otorrhoea due to head injury.

Conclusion

- Males outnumbered the females. Males constituted 92%. Majority of the patients come under the age group of 31-40 constituting 36%.
- Injury to pinna was the most common otological manifestation following head injury constituting about 68% of ear manifestations following head injury.

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