

# AETIOLOGY AND CLINICAL PRESENTATION OF HEAD INJURY IN CHILDREN AT MAYO HOSPITAL, LAHORE

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## ABSTRACT

Head injury is one of the common cause of emergency admission in the department of paediatric surgery, Mayo Hospital Lahore. A prospective study including 6326 patients, who sustained trauma to head of variable severity is presented. The authors have analysed the mode of injury correlating it with the age and sex of the patients. It was found that over 68% of patient sustained injury to head due to fall from roof top, mostly without protective boundary wall. The road traffic accident is the second commonest cause of trauma. Incidence of 26% is in contrast to report from other centres in developed countries. Other causes included firearm injury by stray bullets, striking the head against on object or falling off various households. Importance of protective boundary wall on the roof top, implementation of traffic rules with education of population, legislation for banning the firearm on the various social events is stressed.

## INTRODUCTION

Head injury is one of the leading cause of trauma in infancy and childhood. It has gained epidemic proportions the world over.

## PATIENTS AND METHODS

A prospective study of 6326 patients who sustained trauma to head were admitted in the Department of Paediatric Surgery, Mayo Hospital Lahore, from April 1992 to October 1995. The ages varied from birth to 13 years. For the purpose of age and sex distribution children in 5-13 years of age were considered as one group, whereas children under the age of 5 years of age were grouped according to the Paediatric Coma Scale. Criterion for inclusion in the study was evidence of trauma to head, either alone or a part of multiple injuries. The various causative factors for head injuries were grouped under the following categories; (1), Fall from height (2), road traffic accidents (3), birth trauma (4) and other causes. Fall as a cause of head injury was further subdivided into following subgroups: (i) Fall from roof (ii) stairs (iii) other places e.g. ledges, boundry wall and furniture, etc.

In addition, presenting complaints and clinical finding were recorded to find out their frequency.

## RESULTS

Out of the total 6326 patients, 4379 were male and 1947 were female giving a sex ratio of 2.24 : 1 in favour of males. Sex ratio and age groups is shown in Table 1 & 2.

Table 1. Age and Sex Distribution

Age Group	Male		Female	
	n =	%age	n =	%age
0 - 6 Months	253	05.67	119	06.12
6-12 Months	379	08.65	119	06.12
1-2 Years	716	16.35	318	16.33
2-5 Years	1473	33.65	596	30.61
5-13 Years	1558	35.58	795	40.82
TOTAL	4379	100.00	1947	100

A record of the causes for the head trauma was made into one of the categories already laid down for purposes of the study. (i) fall (ii) road traffic accident (iii) birth injuries (iv) other causes. The results are shown in Table 3 & 4.

Table 2. Age Distribution

Age Group	Group <sup>1</sup>	n =	%age
0 - 6 Months	A	372	05.88
6-12 Months	B	498	07.87
1-2 Year	C	1034	16.34
2-5 Year	D	2069	32.70
5-18 Year	E	2353	37.19
Total		6326	100.00

Table 3. Aetiological classes

Cause	n =	%age
Fall	4339	68.6
R.T.A.	1651	26.1
Birth Injuries	120	1.9
Other Causes	216	3.9
TOTAL	6326	100

Table 4. Aetiological Subclasses

Cause	n =	%age
Roof Top	2855	65.8
Stairs	907	20.9
Other	577	13.3
Total	4339	100

The clinical features were as reflected in Table 5.

Table 5. Clinical Features

	n =	%age
Vomiting	4010	63.38
Fits	1366	21.59
Head ache	1366	21.59
Loss of consciousness	2188	34.58
Ear bleed	843	13.32
Otorrhoea	23	0.36
Nasal bleed	1096	17.32
Rhinorrhoea	31	0.49
Pupillary signs	527	8.33
Cranial nerve lesion	113	1.78
Scalp swelling	1347	21.29
Coma	918	14.51
Hemiplegia	103	1.62
Associated injuries	1075	16.99

## DISCUSSION

Head injury is one of the leading causes of trauma in childhood and has gained epidemic proportions the world over<sup>5,10,14,15,16,18,21,23,24</sup>. It causes worry for the parents and the attending surgeon alike. Head trauma accounts for consumption of a substantial amount of emergency department's facilities. During this study period, 6326 patients of head injury required admission. This accounts for 22.8 % of the total load. These results are comparable to those published from the same centre<sup>1</sup>. The male to female ratio being 2.24 : 1 which closely corresponds to the international studies<sup>6,12,14,17</sup>. Out of 6326 patients 4339 children sustained head injury due to fall. This forms 68.6% of the entire sample. These figures correspond to those of the previous study from the same centre in 1986<sup>1</sup> i.e. 66%. Review of the literature reveals that in majority of the studies the commonest cause of paediatric head injury in infants and younger children is fall<sup>2,7,9,11,17,18,19,22</sup>. In older children, falls were relatively less common and more injuries were related to recreational activities, bicycle accident, and being struck by vehicles<sup>4,6,8,12,13,24</sup>. This was in contrast with the results of the present study where major cause of head injury in older children was again fall. Further analysis revealed that the most common mode of fall was from roof top, stairs, high brick walls, balconies, window parapets etc. Majority i.e. 65.8% (2855) of the falls were from the roof top and the most common scenario, flying. Road traffic accidents accounted for 26.1% (1651) of the cases. This is not in conformation with figures reported in several international studies, where road traffic accidents were the commonest cause of head injury in children of 5 years and above<sup>4,6,8,12,13,24</sup>. The third category of paediatric craniocerebral trauma in this study was birth trauma. This accounted for 1.9 % (120) of cases and these were due to prolonged labour or inappropriate application of forceps during labour. This figure is less than the reported incidence of 4.65% elsewhere<sup>11</sup>. Amongst the other causes which constitute 3.4% (216) of the total sample, were bricks falling on the child hit by cricket bat/ball, T.V falling on the child. Included in this group 19 cases were injuries due to firearms. Out of these 19, 11 patients sustained firearm injury to head from stray bullets. This particular etiological factor, is not mentioned in the international literature as a cause of injury in children, where these were due to shot in head by another child while playing or by adults

accidentally<sup>24</sup>. The stray bullets in these instances were usually a result of firing carried out on various festive occasions especially marriages.

The clinical features noted during the study showed that vomiting was the commonest. Out of the 6326 patients studied 63.38% vomited. Although in the international literature<sup>12,15</sup> this clinical feature was found more often in the children over 2 years of age. However in the present study this clinical feature was found as the commonest amongst all age groups. Ear and nasal bleed in the present study was 13.32% and 17.32% respectively. CSF leak through nose and ear was noted in 0.36% and 0.49% respectively. These results are comparable with those reported by others<sup>8,11,12</sup>. Fits, whether generalized or localised, were noted in 15.69% cases. This is in contrast to international studies where the incidence is 5-7%<sup>13,21</sup>. Pupillary signs and headache was noted in 8.33% and 21.59% respectively. One clinical feature which has a prognostic importance was level of consciousness. Assessment of level of consciousness was made according to Glasgow coma Scale in children over 5 year of age while below this age group assessment was made according to paediatric version of Glasgow Coma Scale<sup>25</sup>. Forty-two percent of patients were conscious at the time of admission while 49% were drowsy and 5.8% were unconscious. History of loss of consciousness was positive in 34.58%. Incidence of various symptoms in our study is not much different from that reported by others.

It is observed that the enormous load of patients with head injury can be reduced by taking protective measures, such as constructing proper boundary walls over the roof top. Need for this has been recognised world over<sup>2,17,24</sup>. In addition media campaign is needed to educate people. Consequences of head injuries should be stressed upon parents by all means available with measures to prevent the same. Use of firearms on ceremonial occasions should also be discouraged by a proper media war lodged against this social evil.

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