

Epidemiology of Paediatric Head Injuries in Government General Hospital, Kakinada, Andhra Pradesh

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Abstract;

Background; Currently there is no documented information regarding the number of paediatric cases affected with head injuries. Our study aim is to study the epidemiological prevalence of injuries, evaluation of management methods, prognosis & sequelae of paediatric head injuries.

Introduction; Trauma has become a leading cause of morbidity and mortality all over the world. The amount of impact of injury in children is different from adults in various aspects. Early diagnosis and screening will help to provide accurate treatment for the needy.

Materials & methods; This is a prospective study. All paediatric head injury patients presenting to dept of neurosurgery, GGH, Kakinada were enrolled in the study. All patients were analysed as per our study protocol.

Results; A total number of 117 patients with paediatric head injury were admitted and managed respectively. Mean age of presentation was 6 years, male children more affected, fall during play was common mode of injury, vomitings was most common presentation, fractures was most injury noted, 23 patients underwent various surgery procedures, 4 patients had paresis & 14 deaths occurred.

Conclusion; Paediatric head injuries were commonly seen in clinical practice in GGH, Kakinada. Majority were of mild severity. Early hospitalization & monitoring in ICU & wards improved the general condition of children & decreased the morbidity as well as mortality.

Keywords; Paediatric head injury, TBI, head injury

Date of Submission: 13-01-2018

Date of acceptance: 31-01-2018

I. Introduction

Traumatic brain injury has become a primary cause of morbidity and mortality, in our day to day lives. It is affecting all age groups and all sections of society. The amount of impact of injury in children is different from adults in various aspects. Early diagnosis and screening will help to provide accurate treatment for the needy. Children, in particular, are extremely susceptible to head injuries. Significant brain trauma can bring about long-term consequences on the child, as well as on the family unit¹ and on society as a whole. Severe injuries may blunt the child's motor development and compromise the child's cognitive abilities². Children with moderate—severe TBI generally experience a greater decrease in health-related quality of life immediately after the injury³.

There is no documented evidence on the total number of population affected with traumatic brain injury available in our area. Our aim is to study the epidemiological pattern of traumatic brain injury in the paediatric age group in the patients coming to Government General Hospital, under Rangaraya Medical College, Kakinada.

The objectives of our study are

- 1) To study the prevalence of paediatric head injuries in GGH, KAKINADA
- 2) Evaluation of management of paediatric head injuries.
- 3) Prognosis & Sequelae of paediatric head injuries.

II. Materials & Methods;

This is a prospective study conducted in Dept of Neurosurgery, Government general hospital, under Rangaraya Medical College, Kakinada, Andhra Pradesh, for the year 2016 and the same were followed up for a period of one year.

117 paediatric head injury patients were admitted out of the total 1432 traumatic head injuries admitted in our

hospital. In the casualty - parents (father/mother/guardian) were questioned regarding the mode of injury , condition of child post injury , preexisting ailments , first aid treatment taken prior to attending our hospital. In our hospital , the child's condition at the time of admission , airway , breathing pattern , circulation , GCS , vital parameters , size of pupil -ocular movements, signs of head injury (vomitings/headache/loss of consciousness/seizures/ENT bleed/paresis/) , all external injuries & other system injuries were neurologically evaluated by our in house neurosurgery resident. Clinico dermatographic data collected from all patients. All patients were then graded according to GCS scale into mild(>14) , moderate(9-13) and severe head injuries(<8). For the neonates and children less than 2 years of age were analysed with modified GCS scale. NCCT brain was done immediately at the time of admission for all patients. Repeat NCCT brain was done at necessary intervals as per requirement. Plain X ray skull was done for children with fractures. Apart from these routine biochemical analysis was done for all the children. All patients were given medical management as per standard treatment protocols followed in our set up. Various Surgical procedures were performed for necessary patients.

Patients were graded and managed respectively in ICU/wards as per requirement. All patients were discharged after complete recovery. Before discharge – a repeat NCCT brain was done , child general condition and GCS reassessed. All children were followed up for a period of one year.

III. Results

A total of 1432 patients with head injury were treated in the department of neurosurgery in GGH , Kakinada. Out of these 117 patients were in the age group of 0-17years. The incidence of paediatric head injuries in our study was 8.17%. The youngest was 22 days old neonate and oldest was 17 years . There was male preponderance of 80.3%(n-94) and females of about 19.6%(n-23). Most common age group was 5-8 years with mean age of presentation of 6 years, only 4 children were under the age of 1 year. Self fall while playing was the most common mode of injury noted in 56 children (47.8%), 41 children met with RTA (35%) , assault in 20 children(17%). Children presented with multiple symptoms. Vomiting in 78 children (66.6%), loss of consciousness in 43(36.7%), seizures in 41 (35%), ENT bleed in 38(32.4%), black eye in 23(19.6%), paresis seen in 7(5.9%), optic nerve injury in 4(3.4%) was noted in all of them in various combinations. NCCT brain findings were normal in 52 children (44.4%), other findings noted were Fractures in 31 children (26.4%) ,linear undisplaced in 19 children (16.2%) ,depressed fractures in 11 children (9.4%). 8 children were operated and 3 children were managed conservatively. EDH was seen in 11 children (9.4%) , 7 children were operated and 4 children managed conservatively. SDH was seen in 6 children (5.1%) , 3 children were operated and 3 child managed conservatively. Intracerebral haematoma/contusion was seen in 7 children(5.9%) , 4 children were operated and 3 children managed conservatively. Diffuse axonal injury was seen in 5 children (4.2%), managed conservatively 5 children (4.2%) had multiple lesions in a NCCT brain , 3 were operated and 2 children were managed conservatively. Post traumatic complications noted were paresis (unilateral upper limb paresis in 3 children , unilateral lower limb paresis in 2 children , unilateral optic nerve injury in 3 children , bilateral optic nerve injury in one child , partial 3rd nerve injury in 5 children , facial palsy in 11 children , resolved in 8 children. CSF rhinorrhoea was seen in 4 children – subsided during follow up with medical management. CSF otorrhoea was seen in 1 child – managed conservatively with lumboperitoneal shunt. Leak subsided with shunt. Meningitis was noted in 7 children – 6 responded to medical management. One child underwent resurgery. 9 children expired immediately after resuscitation in the casualty at the time of admission with head injury and 5 children expired in the ICU. All 5 children were of GCS-E1M1VT since the time of admission.

IV. Discussion

All traumatic brain injuries need proper evaluation and care for adequate management to avoid complications and unnecessary morbidity as well as mortality. Paediatric age group needs more attention because of the few differences from the adult skull and physiology. Paediatric skull has less subarachnoid space that causes reducing buffering capacity to externally applied biomechanical forces. They have less blood pressure as compared to adults , hence have less perfusion pressure. As children brain have less myelin , neuroplasticity of paediatric brain is more as compared to adults⁴.

Patients with poor GCS at the time of admission have poor prognosis and less chances of survival than those with GCS above 8 at the time of admission. 14 children with GCS <4 were admitted .The same has been statistically significant in our study (p value less than 0.00001). In the literature, there were many studies on the outcome of paediatric head injuries based on the glasgow coma scale. By and large there is good correlation between the poor GCS and outcome of the child, but there were variations in final outcome in some studies available. Previously, the guidelines for the management of paediatric head injuries are mainly based on adult guidelines. In 2003, the first evidence-based guidelines for TBI, published by *Adelson et al*⁵, Later advances in the intensive care unit management, optimize outcome in paediatric injuries.

Most of the head injuries in paediatric age are preventable with adequate care towards children ,by not

leaving them unattended. Major proportion of our patients were having mild head injuries. The rate of complications was low in our study when compared to *Chong et al*⁶ and *Bhargava P et al*⁷

All the patients were followed up at regular intervals for a period of one year and re assessed to know the progress of the post traumatic complications. There was good prognosis and degree of improvement gave good quality of life to the child and the family.

The drawbacks in our study were less period of study and the size of sample.

This study was approved by the ETHICS committee of the RANGARAYA MEDICAL COLLEGE & GOVERNMENT GENERAL HOSPITAL , kakinada.

V. Conclusion

Paediatric head injuries were commonly seen in clinical practice in GGH , kakinada. Majority were of mild severity. Early hospitalization & monitoring in ICU & wards improved the general condition of children & decreased the morbidity as well as mortality. This study was helpful in identifying the incidence of head injuries in the paediatric age group and helpful to educate our common public regarding the nuances of it to avoid injury to children.

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Dr. M Premjith Ray "Epidemiology of Paediatric Head Injuries in Government General Hospital, Kakinada, Andhra Pradesh." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 17, no. 1, 2018, pp. 50-52.