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CLINICO ETIOLOGICAL EVALUATION OF CONVULSION IN CHILDREN BETWEEN 6 MONTH TO 6 YEARS OF AGE

Pediatrics

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ABSTRACT

Introduction: Seizure is one of the common causes of childhood hospitalization with significant morbidity and mortality. The objectives of current study was to knew the clinico etiological profile of convulsion in children between 6 months to 6 years of age Rajasthan,India

Methodology: This study was a Prospective Observational study conducted in the Department Paediatrics of Jawahar Lal Nehru Hospital and Hospital Ajmer,India,from January 2015 to December 2015.

Results : The most common seizure type was Primary Generalized Tonic Clonic Seizures (77.1%) followed by Myoclonic (5.38%) and Complex partial seizures (4.48%). Incidence in males (55.1%) was higher than in females. The most common etiology for epilepsy was Idiopathic (79%) followed by Post HIE and or cerebral palsy seizures (18.3%).

Conclusion: The most common etiology for epilepsy was idiopathic 79%, followed by post Hypoxemic ischaemic (HIE) seizures. These post HIE Seizures can be prevented by improving the health care facilities, strengthening peripheral health care system and neonatal care units at district hospitals.

KEYWORDS

Seizures, Epilepsy, Etiology

INTRODUCTION:-

Seizures are the most common paediatric neurological disorder[1]. Acute seizures are a common neurological symptom in sick children. In patients with fever, they include febrile seizures, acute symptomatic seizures (e.g. in a child with pyogenic meningitis) or initial seizures in a child with epilepsy or epilepsy syndrome.Worldwide, febrile seizures are the most common type of acute seizures in children. Most are associated with infections and have a good outcome[2]. Febrile seizures are the most common seizure disorder in childhood, affecting 2 - 5% of children between the ages of 6 months and 5 years.The incidence is highest in children less than 3 years of age, with a decreasing frequency in older children. Seizures account for about 1% of all emergency department visits, and about 2% of visits of children's hospital emergency department visits. In most of the studies,febrile seizures were reported to be the most common type seen in the paediatric population and account for the majority of seizures seen inchildren younger than 6 years of age[2].

Seizure is a common problem evaluated in paediatric emergency departments[3]. A seizure or convulsion is a paroxysmal, time limited change in motor activity and / or behaviour that results from abnormal electrical activity in the brain[4].A seizure is defined as transient, involuntary alteration of consciousness, behaviour, motor activity, sensation, or autonomic function caused by an excessive rate and hypersynchrony of discharge from a group of cerebral neurons. A postictal period of decreased responsiveness usually follows most seizure, in which the duration of thepostictal period is proportional to the duration seizure activity[5].

The International League against Epilepsy (ILAE) defines a FS as a seizure occurring in childhood after one month of age, associated with a febrile illness that is not caused by an infection of the central nervous system. A child with the diagnosis of FS cannot have a history of neonatal seizures, a previous unprovoked seizure or meet criteria for other acute symptomatic seizures. The National Institutes of Health (NIH) Consensus Conference definition of FS is an event usually occurring between 3 months and 5 years of age, associated with fever, but without evidence of intracranial infection or defined cause.

Epilepsy is a chronic neurological disorder characterised by a recurrent tendency to have spontaneous, intermittent, abnormal electrical activity in a part of the brain, which manifest as seizures, and diagnosed as the result of a patient having a second unprovoked seizure, with at least 24 hours between the first and second seizure. Status epilepticus refers to continuous or recurrent seizure activity lasting longer than 5 minutes without recovery of consciousness[5].

The manifestation of the seizure depends upon the threshold of the brain to manifest a clinical seizure. The age and neurodevelopment maturity status determine the clinical manifestations and the type of seizure disorders encountered[6].

Although the outlook for most children with symptomatic seizures or those associated with epilepsy is generally good, seizure may signal a potentially serious underlying systemic or central nervous system (CNS) disorder that requires thorough investigation and Management[4].

The patients require aggressive stabilization,resuscitation and concurrent implementation of diagnostic testing, monitoring and pharmacological interventions[7].

AIMS:

To study the clinico etiological profile of convulsion in children between 6 months to 6 years of age.

OBJECTIVES

1. To study distribution of convulsion in children between 6 month to 6 years of age group admitted in paediatrics ward in J.L.NMedical College and hospital,Ajmer.
2. To evaluate the patient through detailed history and physical examination and identify the various etiologies involved in convulsion.
3. To study the various clinical pattern of convulsion and others symptoms associated with convulsion.

MATERIALAND METHODS

This study was a Prospective Observational study conducted in the Department Paediatrics of Jawahar Lal Nehru Hospital and Hospital

Ajmer,India,from January 2015 to December 2015. After approval from the hospital ethical committee.

INCLUSION CRITERIA:

Children from 6 months to 6 years of age with seizures admitted in Paediatric ward of J.L.N. Medical College & Hospital, Ajmer.

EXCLUSION CRITERIAS:

1. Cases with toxicological causes of convulsions.
2. Children less than 6 months and more than 6 years of age.
3. Unstable patients who died before the confirmation of diagnosis.

METHOD OF COLLECTION OF DATA:

The study is a prospective hospital based study. Duration of study was starting from 1st January 2015 to 31st December 2015. The study done on 200 consecutive cases admitted to Paediatric ward J.L.N. Hospital, Ajmer, Rajasthan, to know the various etiologies of convulsions in children between 6 months to 6 years of age.

The following investigations done stepwise depending on the clinical presentation.

1) Complete blood counts which included total count, platelet count,haemoglobin, differential count.2) Metabolic screening like serum electrolytes, serum calcium, serum glucose.3) Lumbar puncture and CSF analysis.4) Electroencephalograph5) CT scan and6) MRI as and when required. Data thus collected were entered in Microsoft Excel Sheet by investigator himself on same day so as to minimize data entry bias if any. analysed using SPSS version 24. The results were presented as percentages and Chi-square test was used to assess the association. P-value of less than 0.05 was taken as the level of significance.

RESULT

A total of 11890 children in the age group of 6 month to 6 year were admitted to in J.L.NMedical College and hospital,Ajmer during 1-year study period. Among them 897 (7.5%) had recent seizure. Febrile seizures were diagnosed in 545 (60.6%), Acute Symptomatic Seizures in 129 (14.3%) and Seizure disorder in 223 (24.8%) of 897 patients. Only these 223 patients were included in the study, of which 123 (55.1%) were males and 100 (44.9%) were females. Out of 223 patients 172 (77.1%) had Primary Generalized Seizures, , 12 (5.38%) Myoclonic seizures, 2 (0.89%) Absence Seizures, 8 (3.58%)) Tonic Seizures, 10 (4.48%) Complex Partial Seizures, 7 (3.1%) Simple Partial Seizures, 3 (1.34%) Secondary Generalized Tonic Clonic Seizures

Table 1: Incidence of different types of seizures with gender distribution

S. No		Males	females	Total Number
1	Febrile seizure	308	237	545(60.6%)
2	Seizure disorder	123	100	223(24.8%)
3	Acute Symptomatic Seizures	62	67	129(14.3%)
4	Total			897

The unprovoked seizures were more common in Males 123 (55.1%) than females 100 (44.9%).

Table 2: Following were types of seizure diagnosed in children.

S. No	Epilepsy type	Males	Females	Total	%
1	Primary Generalized Tonic clonic seizures	94	78	172	77.1%
2	Tonic seizures	5	3	8	3.5%
3	Myoclonic Seizures	8	4	12	5.3%
4	Absence seizures	2	1	3	0.8%
5	Clonic seizures	3	3	6	2.6%
6	Atonic seizures	1	2	3	1.3%
7	Complex Partial Seizures	6	4	10	4.4%
8	Simple partial seizures	3	4	7	3.1%
9	Secondary GTCS	2	1	3	1.3%

Table 3: Etiology of different types of epilepsies in children in 1 month to 6 years age group

S.N	Etiology	Males	Females	Total	%
1	Idiopathic	98	80	178	79.8%
2	Post HIE/Cerebral Palsy	22	19	41	18.2%
3	Anatomical Malformations of brain	1	0	1	0.5%
4	Sturge Weber syndrome	1	1	2	0.8%
5	Tuberous Sclerosis	1	0	1	0.5%
6	Total	123	100	223	

The most common etiology for unprovoked seizures was idiopathic 178 (79.8%) followed by cerebral palsy 41(18.3). The other causes found were Sturge Weber Syndrome 2 (0.8%), Tuberous Sclerosis 1 (0.5%), and Anatomical Malformations of brain 1 (0.5%).

Discussion

Incidence studies are not available from the Indian subcontinent. There are several prevalence studies which suggest prevalence rate epilepsy is 5.59/1000 population). Our study revealed the cumulative incidence of epilepsy 18.5/1000 (1.85%) which is in accordance with studies done by S.W Rose et al[8]. and R. Sridharan[9] who reported that cumulative incidence of epilepsy is 2-4%. While as studies conducted by Hauser WA[10] showed the incidence of epilepsy (recurrent unprovoked seizures) in children ranging from 0.05 to 0.1% (50 to 100/100000) contradicting our study. The incidence of epilepsy ranges from 40 to 70 per 100,000 in most developed countries and from 100 to 190 per 100,000 (1-19%) in developing countries according to Sridharan[9].

The higher incidence of epilepsies in our study can be perhaps due to high incidence of birth asphyxia, increased rate of preterm deliveries, neonatal septicemia, TORCH infections, and low rate of immunization, poor socio economic status, and high rate of consanguious marriages. One of the main reasons for the higher incidence of epilepsy in Kashmir is the higher risk of experiencing conditions which can lead to permanent brain damage. There is still poor health care system in peripheries which cater more than 80% population, lack of pediatric specialists, poor referral system for newborn, high incidence of meningitis as vaccination against streptococcus pneumonia and H influenza is not routinely done, pre and perinatal complications and malnutrition and hereditary factors. Many of these factors are, however, preventable or modifiable, and the introduction of appropriate measures to achieve this could lead to a substantial decrease in the incidence of epilepsy in developing countries and Rajasthan .Our study showed that epilepsy is more common in males than females 55.1% vs. 44.9%, but difference is not statically significant, which is in consistent to R. Sridharan[9]. Our study revealed that the most common cause of epilepsy was idiopathic 79.8% and specific cause was ascertained in 20.2% of cases. This is consistent with studies done by R. Sridharan[9], AL Rajesh et.al[11], they revealed that in more than 60% cases cause cannot be delineated. In our study primary generalized tonic seizures were the most common type 77.1%, which was in accordance with Hauser WA[10], Milen Pavlovik et al[12] and AL Rajesh et al[11].

Conclusion

The incidence of unprovoked or epileptic disorders in the age group of 6 month to 6 years is 1.85%. The unprovoked seizures were more common in males 55.1% than females 44.8%. The most common presentation of unprovoked seizures was primary generalized tonic clonic seizures 77.1% and most common etiology for unprovoked seizures was idiopathic 79.8% followed by post HIE/cerebral palsy 18.3%. Hence incidence of unprovoked seizures can be decreased by strengthening comprehensive perinatal and neonatal care services.

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