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Clinical Profile of Early Child Hood Epilepsy and Developmental Outcome

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Abstract:-

- **Background**

Seizure constitutes 70% of all paediatric neurological problems. The incidence rate of seizure is 144 per 100 000 person-years in infancy.Infants from 1 to 24 months are taken in this study as literature supports the differing semiology in this age group compared to older children and also the neonates.

- **Objective**

To know the aetiology, clinical profile and developmental outcome of infants aged 1-24 months with seizures.

- **Method**

Children aged 1-24 months with seizure attending OPD/ER/ admitted in Paediatrics ward of Hi-Tech MCH, Bhubaneswar from September2019 – October2021 were included. Febrile seizures and neonatal seizures were excluded. Developmental status was assessed at admission using DASII scales and then followed up at 3months and 6months. EEG, CT & MRI were done in selected cases. Data was analyzed by using appropriate statistical techniques in the form of tables, graphs and diagrams.

- **Result**

92 children (56 male,36 female) were included. Mean age at seizure onset was 6.7months. The most common etiology was perinatal as phyxia(57%). Neurological examination was abnormal in 75% and neuro imaging abnormality was in 71.4%. The most common type of seizure was generalised (69.6%). Developmental delay was found in 82.1%.

- **Conclusion**

Perinatal asphyxia is the most common cause of seizures in infants aged 1-24 months and developmental delay is found in 82.1% cases. This study helps us to identify the aetiology of seizure in children aged 1month-24months, know the most common clinical profile prevalent in our setup and also guide us to know the developmental outcome of such children which will allow us to identify and treat the disease early and also prevent any developmental delay.

Keywords:- *Infants, DASII, seizure, developmental assessment, MRI.*

I. INTRODUCTION

Seizure constitutes 70% of all paediatric neurological problems. The incidence rate of seizure is 144 per 100 000 person-years in infancy. Infants from 1 to 24 months are taken in this study as literature supports the differing semiology in this age group compared to older children and also the neonates. Childhood seizures occur most commonly in infancy (1–24 months) with a decreasing incidence throughout the remainder of childhood. Brain development occurs at the maximum level by 2 years of age, the brain grows to 80% of adult size by 2 years of age. According to a study done by Pankaj Kumar Sahu et al in 2016, predominantly generalized seizures were present in 56.7% infants, focal seizures in 18.3% and epileptic spasms in 25%. West syndrome, Dravet syndrome and Lennox-Gastaut syndrome were the epilepsy syndromes identified. According to a study by Ahmed S. et al in 2010, out of 50 patients 16(32%) cases presented with tonic clonic seizure, 9(18%) cases presented with tonic seizure and clonic seizure was in 15(30%). Myoclonic seizure was found in 4(8%) cases. Only 4(8%) cases were presented with infantile spasm and 2(4%) cases with mixed type. There is a sharp difference between neonatal and post neonatal seizures in infants with respect to aetiology, seismology, E.E.G & imaging outcomes and final prognosis.

There is currently very few population based information in the literature about the distribution of seizure types in infants. Limited data are available from hospital and specialist clinic based series of children with seizure onset in the first year of life. A wide and heterogeneous spectrum of aetiologies is associated with seizure onset in the first year of life. The long list of conditions includes various types of developmental cortical malformations, chromosomal abnormalities, ion channel gene mutations, metabolic disorders, as well as pre-, peri- and post-natally acquired brain lesions (Kuzniecky and Barkovich, 2001;Nabbout et al., 2003;Weaving et al., 2004;Arzimanoglou et al., 2004b;Ferrari et al., 2005;Guerrini et al., 2007). Cortical malformations, especially if diffusely involving one or both

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hemispheres, are frequently associated with seizure onset in the neonatal period or early infancy (Vigevano, 1999).

II. DEVELOPMENTAL ASSESSMENT SCALE FOR INDIAN INFANTS (DASII)

This is specifically, minutely and precisely designed for Indian infants. It is equivalent or comparable to Bayley Scale for infant development used in US. It can be used in children upto 30 months of age with normal development or in children with delayed development. It can detect any minute deviation from the normal development at the earliest. It has special characteristic to separately find out motor DQ and mental DQ. It includes 67 items for assessment of motor development and 163 items for assessment of mental development. Both motor and mental DQ- >85% is normal, 70-85% is borderline and these children need close monitoring, if <70%etiology for developmental delay has to be looked for.

A. Aims And Objectives

- To know the aetiology and clinical features of seizures in infants aged 1-24 months.
- To know the developmental outcome of infants aged 1-24 months with seizures.

III. MATERIALS AND METHODS

A prospective cross-sectional study was conducted in Hitech Medical College & Hospital, Bhubaneswar from September 2019 – October 2021.

Children aged 1 month – 24 months with seizure attending OPD/ER/ admitted in Paediatrics ward of Hi-Tech MCH were included in the study.

A. Inclusion Criteria –

- Children presenting with seizure to the OPD/ER/admitted in the Paediatrics ward of HMCH in the age group of 1month-24months.
- History of first episode of seizure, or history of more than one seizure but not evaluated.

B. Exclusion Criteria –

- Febrile seizures.
- Neonatal seizures.

Patient particulars like age, sex, address was noted. A detailed history including age of onset of illness, any maternal illness or history of any drug intake during pregnancy, natal and postnatal history for evidence of birth asphyxia, developmental history, family history for evidence of any similar cases was taken. A thorough clinical examination including general condition of the child, dysmorphic features, anthropometry and neurological examination was done. Developmental status of the child was assessed at the time of presentation and after 3months and 6months using DASII scales. EEG and imaging studies of brain like CT & MRI was done in selected cases.

Data was entered into MS Excel, tabulated and analyzed using appropriate statistical test.

IV. RESULTS

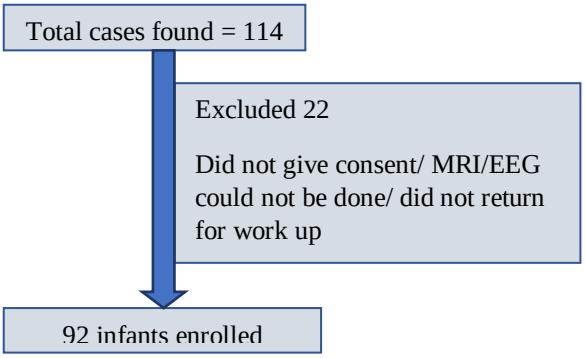

Fig 1. Results

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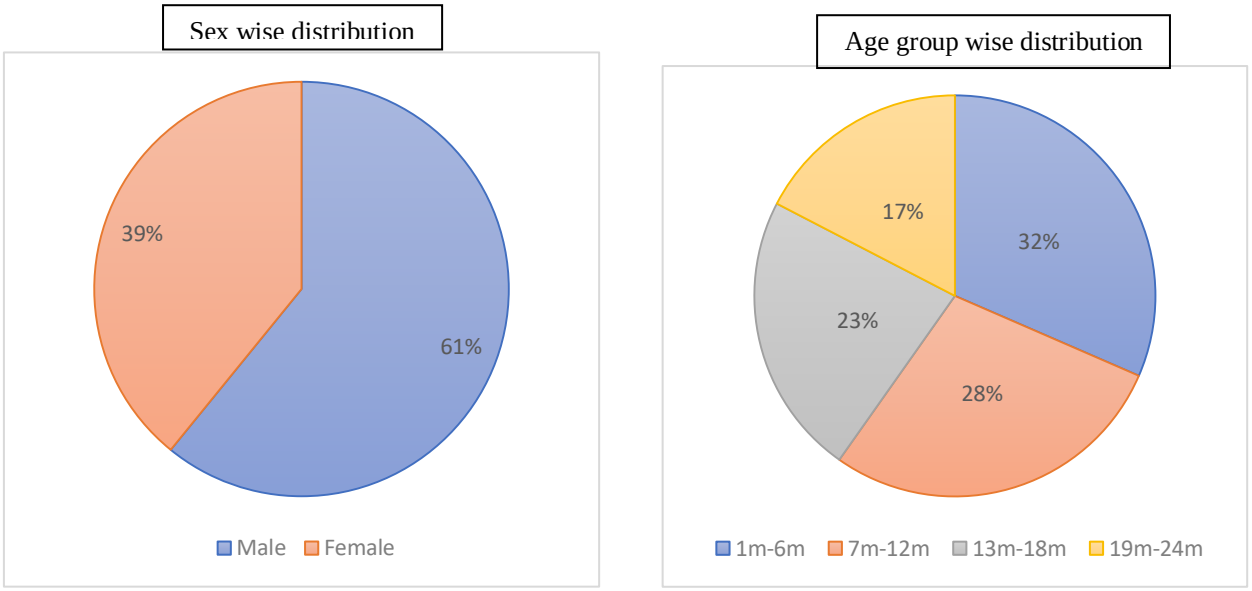

Fig.2 Distribution

Clinical Characteristic	Number of cases	Percentage of cases
Status epilepticus (SE), one or more episodes: 1. SE preceding diagnosis 2. SE at diagnosis (second seizures) 3. Recurrent episodes	 3 1 3	 3.2% 1% 3.2%
Neurology at time of enrolment: Normal Unspecific abnormalities: Hypotonia / Posturing Focal signs	 32 35 25	 34.7% 38% 27.1%
Severity of seizures at baseline: 1. Daily 2. Weekly 3. Monthly (< 12 weeks seizure free) 4. Seizure free for > 12 weeks	 13 5 28 46	 14.1% 5.4% 30.4% 50%
Number of antiepileptic drugs trialled: 0 1 2 3 >3	 36 26 18 10 2	 39.1% 28.2% 19.5% 10.8% 2.1%

Table 1. Clinical Characteristic

West Syndrome and Dravet syndrome and other developmental epileptic encephalopathies were the epilepsy syndromes identified out of which West syndrome was the commonest.

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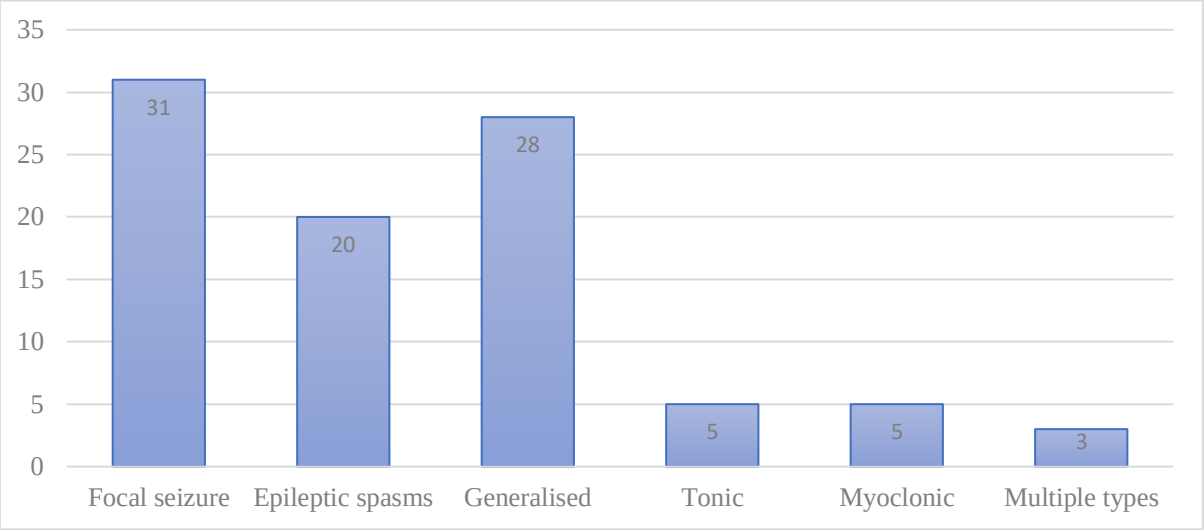

Fig. 3: Distribution According To Type of Seizure

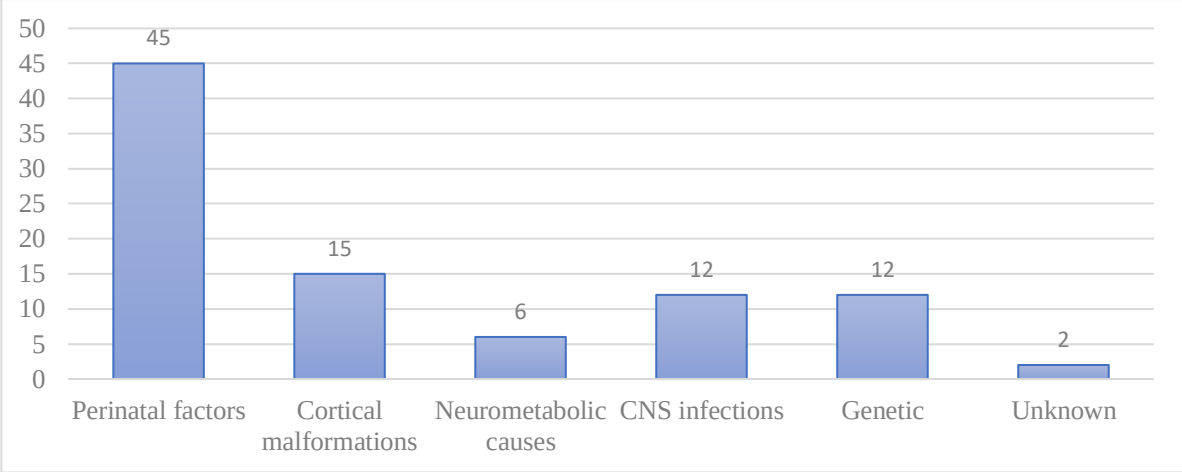

Fig. 4: Distribution According To Etiology

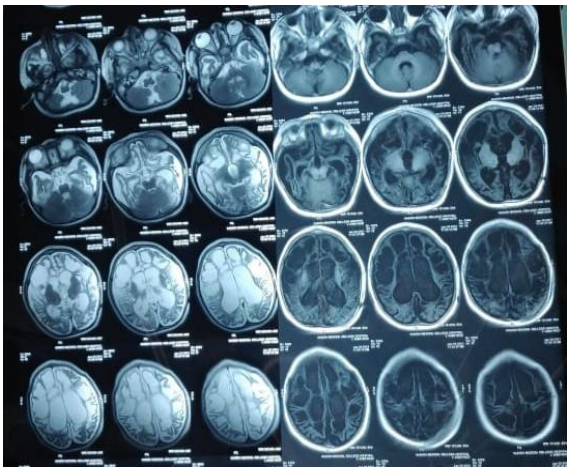

Fig.5 (A)

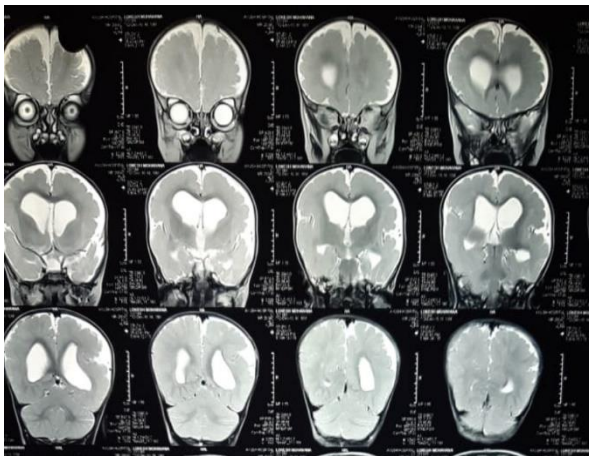

Fig. 5: (B)

A. Severe anoxic-hypoxic encephalopathy with cystic gliosis in white matter with secondary changes.
B. Gliosis with parenchymal atrophy in B/L parieto-occipital lobes- sequalae of HIE

SL NO.	SYNDROME	NO. OF CASES
1	West Syndrome	8
2	Developmental epileptic encephalopathies	5
3	Dravet Syndrome	6
4	Benign Myoclonic Epilepsy of Infancy	3
5	Mesial temporal lobe epilepsy with hippocampal sclerosis	2

Table 2: Epilepsy Syndromes

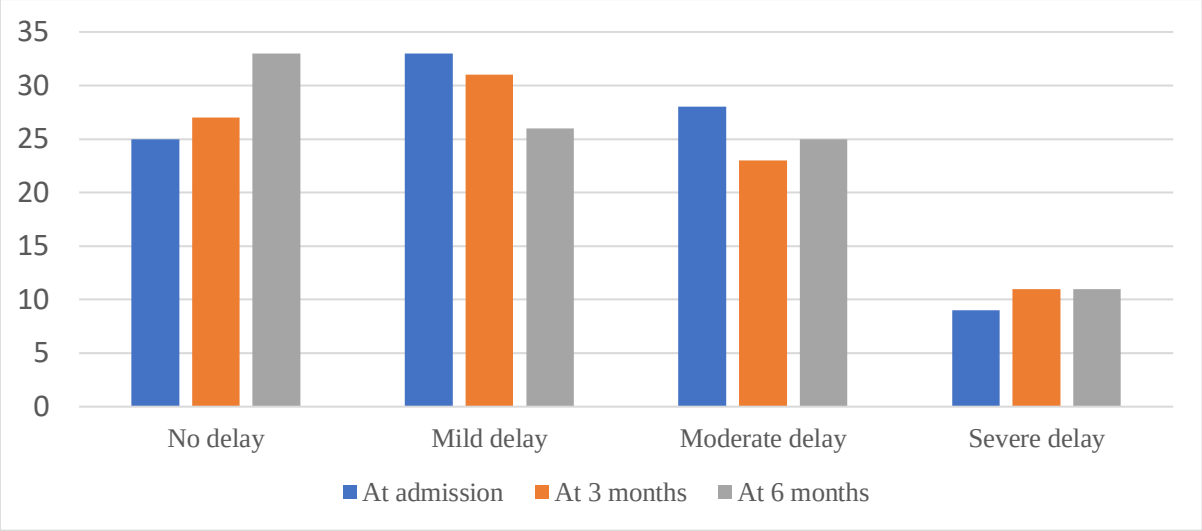

Fig. 6: Developmental Status at Admission and At Follow Up

	Developmental delay	
	Present(47)	Absent(9)
Neurological examination		
Normal	3	6
Abnormal	44	3
Neuroimaging		
Normal	5	5
Abnormal	42	4
Electroencephalography		
Normal	8	7
Abnormal	39	2

Table 3: Factors Associated With Developmental Delay in Children with Epilepsy

V. CONCLUSION

- Most of the epilepsy in infants less than 2 years is symptomatic, the commonest aetiology being perinatal asphyxia. Developmental delay is found in majority of such infants. Being a potential preventable entity it needs early identification, follow up and management of seizures.
- Children with seizures comprise a significant burden in inpatient department of developing countries having various aetiologies. Proper study on clinicodemographic profile of seizures can help in proper understanding of the disease burden and to take appropriate measures for its control.
- This study will help us to identify the aetiology of seizure in children aged 1month-24months, know the most common clinical profile prevalent in our setup and also guide us to know the developmental status of such children which will allow us and the parents to identify the disease early and also prevent any developmental delay in such children.

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