Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2017; 5(11E):4635-4638 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI:10.36347/sjams.2017.v05i11.063

Clinico-Etiological Profile of Neurological Disorders in Hospitalized Children in Odisha

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Original Research Article

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Article History
Received: 22.11.2017
Accepted: 26.11.2017
Published: 30.11.2017

Abstract: A hospital based study of neurological disorders prevalent in children admitted to a tertiary care hospital. A total of 414 cases were studied and classified according to ICD-NA (1997) from G00-G99 after diagnosis was established using routine investigations and others available and as required. It was found that peak incidence occurs below 3 years predominantly in males. Most common neurological disorder being inflammatory disease (57%) under which most commonly pyogenic meningitis and encephalitis (80%). Most common seizure type here being Generalised Tonic clonic Seizure (72%) overall. Most common cause of death being Encephalitis (40%) with half of the cases diagnosed as encephalitis or TBM presenting with some form of epilepsy.
Keywords: ICD, Neurological disorders, Meningitis, Encephalitis, Seizure, EEG, CT scan.

INTRODUCTION

Neurological disorders constitute a wide range of dysfunctions and deficits ranging for central nervous system, peripheral nervous system, myo-neural junction and muscle. According to a recent survey neurological disorders account for 20% of total disease morbidity [2]. The condition is widely studied in adult population but many lacunae exist in the pediatric population. Paucity of studies here prompted us to carry forward this study at our tertiary care centre. The main aim was to find out the disease burden of Neurological disorders.

MATERIALS AND METHODS

In this descriptive study we analyzed retrospectively data from March 2005 to February 2007 under the Dept. of Pediatrics, Sardar Vallabh Bhai Patel Institute of Pediatrics and Sri Ramchandra Bhanj Medical college and hospital, Cuttack, Odisha all cases admitted and diagnosed of suffering from Nervous system disease and those falling under ICD-NA (1997, WHO) and were classified under codes G00-G99 and included in the study. Those not coming under the definition provided by these codes were excluded from our study.

All demographical data was collected regarding the cases selected followed by thorough investigations, serological studies along with CSF findings were taken and correlated. Where required neuroimaging studies done of the cases and all the findings were tabulated and analysed.

All cases were diagnosed using standard definitions given by WHOM, treatment given as per SOP and then classified according to ICD-NA [1]. All diseases were classified into 6 main groups.

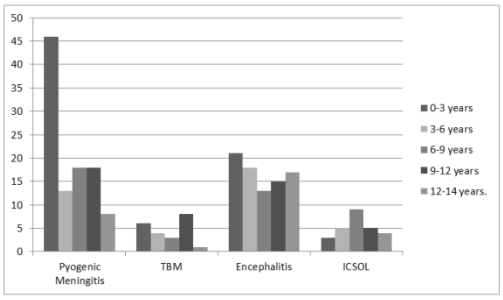
- Inflammatory Disease.
- Episodic and paroxysmal disorders.
- Polyneuropathy.
- Cerebral Palsy.
- Encephalopathy.
- Miscellaneous. (Systemic atrophic disorders, Degenerative and demyelinating disorders, peripheral nerve disorders, neuromuscular disorders, others.)

The data was the analyzed using Microsoft excel, word and basic statistics utilized. Appropriate consent taken and no disclosures for the study

RESULTS

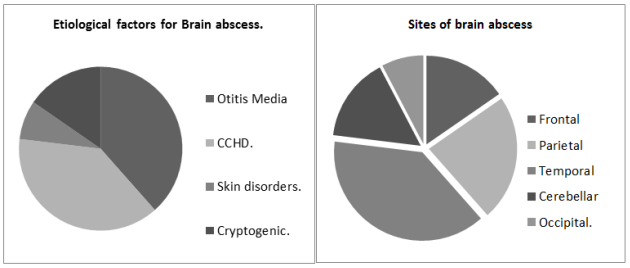
A total 8299 cases admitted, 414 cases were diagnosed to have neurological disorders. The male to female ratio was (2:1). Most of the cases were from 0 to 3years of age (28.2%).

Most common cause of neurological illness was inflammatory disease (56.7%) of the CNS mostly due to Pyogenic meningitis 43.8% of the total. These were further most common in <3 years age. Other conditions here were TBM in 9.5% cases, 35.7% cases presented with encephalitis and 11% with intracranial abscess and granuloma. The table shows age wise distribution of CNS infectious pathologies.



Among these inflammatory disorders, ICSOL contributed to 11% cases, most common among them being brain abscess (13 cases) with location most commonly in the temporal region (40% cases).

17.6% cases presented with epilepsy disorders, most commonly presenting with generalized tonic clonic convulsion (72% cases of these).



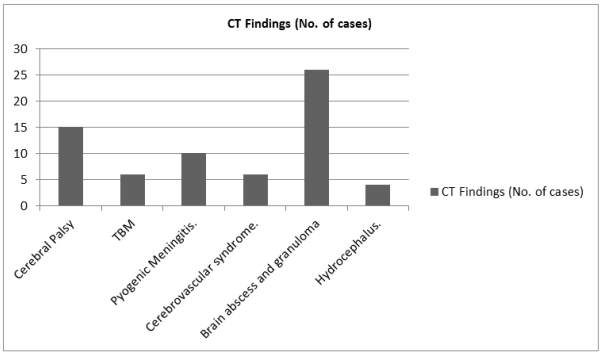
Most common cause of Cerebral palsy (6%) was Spastic (80% of CP cases), of the cases of which Quadriplegic (32%) was seen in majority closely followed by hemiplegia (28% cases). Most common predisposing factor being natal factors (44%).

Most common cause of peripheral neuropathy in the study was Guillian Barre Syndrome, 92% were ascending and 8% of these cases were descending type. Cranial nerve involvement was seen in 24% cases and autonomic disturbances were seen in 19% cases and 4.7% cases were a relapse case with history of GBS in the past.

35 cases presented with encephalopathy with Hepatic encephalopathy being the cause in 32 of them (91.4%).

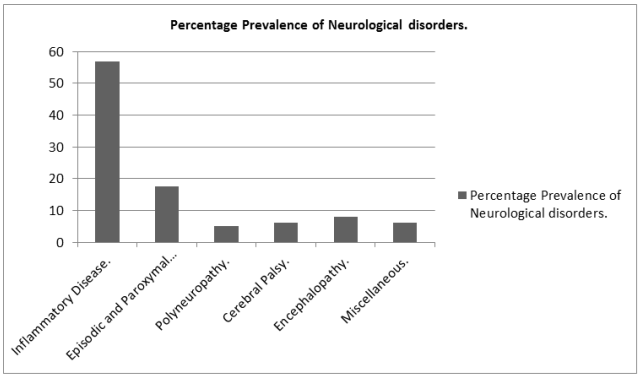
We performed Electro-encephalogram in 68 cases presenting with epilepsy with GTCS pattern seen in 70.5% cases.

CT scan was done for 67 cases in the entire study. A positive correlative finding was found in 82% of these cases. Cerebral palsy cases presented with Global shrinkage in 8 cases, porencephalic cyst in 1 case, microcephaly in 1 case on CT. 4 cases of TBM had dilated ventricles with basilar enhancement on CT. 4 cases of pyogenic meningitis had Subdural effusion, 2 cases had hemorrhage and 4 had infarction in cases with cerebrovascular syndrome, Among ICSOL cases, 13 diagnosed with brain abscess, 11 with tuberculoma and 2 with neurocysticercosis and 4 cases of hydrocephalus diagnosed on CT.



DISCUSSION

The prevalence of neurological disorders in our study was found out to be 5% as compared to 2.85% in a study at Malda [2], 1.42% in a Bengaluru study[3] and 0.96% in Kashmir[4], all these studies are conducted for the community while ours was a hospital based study.



The overall male to female ratio was 2:1 here, the Malda study it was 1.37:1. Anand and Singh[5] found a lower rate of affection in females similar to our study. In a hospital based study male predominance could be due to social factors resulting in males getting more attention the females.

In our study prevalence of pyogenic meningitis was 24.8%. Study conducted by Nalva *et al.* [6] observed prevalence of pyogenic meningitis to be 3 times that of TBM. A Nigerian study by Briggs et al. found seizure disorder (25%) to be the commonest disorder followed by Cerebral palsy(15.4%), in the same study CNS infections comprised of 6.6% cases. This is due to the fact it was a community based study[7].

In our study GTCS was seen in 72% cases presenting with epilepsy, Anil Kaushik et al too found such predominance. In a Sudan based community study by Mohamed IN, Elseed MA *et al.* 47.8% cases were of epileptic disorders (as compared to 66.5% in ours) followed by cerebral palsy which accounted for 19.1% cases[8].

In our study, Cerebral palsy most common type was Spastic quadriplegic (4.8%), Briggs *et al.* also reported most common type being spastic quadriplegia with prevalence of 5.4%. In a Jammu community based study, prevalence was 277 per 100000 population [9].

Most common etiological factor for cerebral palsy were natal or post natal factors in our study (44%), in a study by Laisram *et al.*[10]. it was 43.8% and O'Reilly and James[11] it was 46.3%. According to textbook of Neurology by Adams, Ascending type GBS occurred in 90% cases which correlated to our study in which 92% were of the ascending type[12].

Hepatic encephalopathy is known to complicate both acute and chronic liver failure and may be caused by potentially reversible abnormalities, while its extreme form can lead to coma and death. We had 32 cases of hepatic encephalopathy due to viral hepatitis; the virus was not identified except two cases of Hepatitis B who had history of blood transfusion.

CONCLUSION

Infective neurological disorders still constitute the major cause of mortality despite improved diagnostic and treatment modalities. Neurological disorders producing sequela is a major cause of morbidity in our nation. A wider community based study is needed to understand the burden of these

diseases in the community and thus help in implementation of national programs.

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