

Original Research Article

Analysis of posterior segment findings in acute encephalitic syndrome in a tertiary care institute

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ABSTRACT

Background: Objective of the study was to determine the posterior segment findings in cases of acute encephalitic syndrome (AES) in patients attending the paediatrics department of Assam Medical College.

Methods: A prospective study of 36 cases of AES attending the paediatrics department of Assam Medical College during a period of 6 months was taken into consideration.

Results: 36 cases of AES were studied during a period of 6 months. The maximum number of cases was around 5 years (41.6%). The number of cases in males were more than in females (63.8% vs. 36.1%). The posterior segment findings were papilledema (44.4%), optic disc hyperemia (52.7%), and retinal hemorrhages (3%).

Conclusions: Analysis of posterior segment findings helps in early detection and preventing the sequelae and complications and therefore helps in saving the eye.

Keywords: AES, Optic disc hyperemia, Posterior segment findings, Papilledema

INTRODUCTION

In Western individualized and tropical countries, a minimum incidence of 2 per 1,00,000 Acute Encephalitic Syndrome (AES) cases have been reported for adults and 10 per 1,00,000 for children and 6 per 1,00,000 for all age groups.¹ An overall incidence of acute encephalitis is between 1 and 15 per 1,00,000 with higher incidence in children than adults.²

Patients with encephalitis and meningoencephalitis have high risk of developing sequelae and complications of the ocular structures that leads to focal neurological deficits and various oculovisual anomalies including blindness in the future.

Posterior segment findings depending on clinical data have not been studied till now in our institute. Most of the studies took the account of neuroimaging and follow up

data. Since the northeastern part of India is endemic for Acute Encephalitic Syndrome, specially Japanese Encephalitis, so the present study was carried out to detect the posterior segment changes in acute stage of disease and to identify clinical and laboratory based risk factors which would be helpful in reducing ocular morbidity in children.

METHODS

Observational study was done in Department of Paediatrics, Assam Medical College and Hospital, Dibrugarh, Assam for Six months from July 2019 to December 2019.

36 patients diagnosed as Acute Encephalitic Syndrome (AES) in the age group of 5-12 years were taken up for study.

Inclusion criteria

1. 36 diagnosed cases of Acute Encephalitic Syndrome in the age group of 5-12 years during the study period.

Exclusion criteria

Patients with preexisting ocular disorders, patients whose parents/guardians did not give consent and were not willing to participate in the study.

Procedure

All patients had undergone thorough clinical evaluation including detailed history, general and local ophthalmological examination as mentioned below within 14 days of presentation of symptoms.

History

A detailed history was taken from parents/guardians of the participants regarding onset of the disease and associated ocular symptoms.

A detailed history regarding the presence, onset and duration of fever, altered sensorium, seizures, headache, decreased feeding, vomiting, abnormal posturing was taken. Any history of contact with patients suffering from pulmonary tuberculosis and immunization history was taken.

Ocular history

A detailed ocular history about the onset and duration of diminution of vision, double vision, deviation of eyes, limitation of eye movements, drooping of eyelids, face turn, abnormal head posture, chin elevation, previous ocular disease etc. was taken.

Examination

Visual acuity was examined for both distance and near with the help of Snellens chart or broken ring chart (for illiterate).

Visual field was examined by confrontation test

External examination was done by a well illuminated torch

In Fundus examination, the pupils were dilated with a combination of phenylephrine hydrochloride 5% and tropicamide 0.8% eye drop. After 15 minutes to half an hour, fundus examination was done with direct ophthalmoscope and binocular indirect ophthalmoscope using 20 D lens.

Investigations

Routine tests

CBC, DLC, ESR, RBS, Serum CRP

CSF analysis

Lumbar puncture was performed in the acute phase.

Analysis of CSF

Microbiological analysis

Culture and sensitivity for bacteria, virological tests by IgM capture ELISA.

Institutional Ethics Committee (Assam Medical College And Hospital) clearance was obtained and a written informed consent was taken from the parents/guardians of the participants for conducting the study.

Statistical analysis

No such scientific tools were needed.

RESULTS

All the cases were examined within 14 days of presentation of symptoms and the observations made were recorded and documented below.

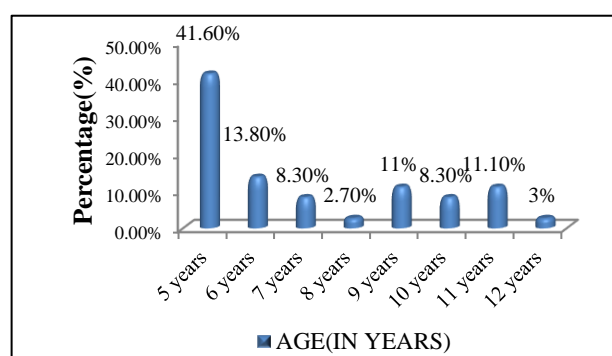


Figure 1: Age distribution.

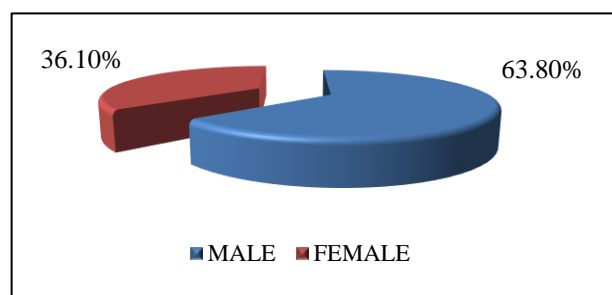


Figure 2: Sex distribution.

Out of 36 cases, the maximum number of cases were around 5 year age group (41.6%) and the least number of cases were found in the age of 8 years (2.7%). Out of 36 patients, males (63.8%) were more in comparison to females (36.1%).

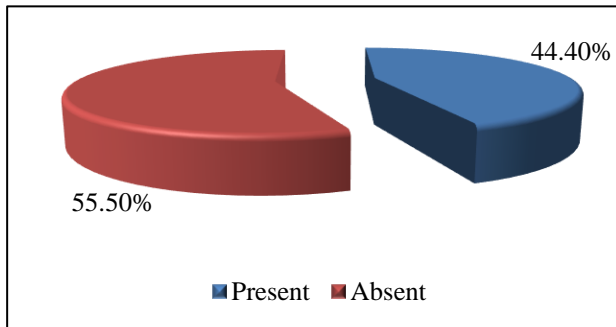


Figure 3: Distribution of papilledema.

Out of 36 patients 16 (44.4%) had papilledema and 20 (55.5%) had no papilledema.

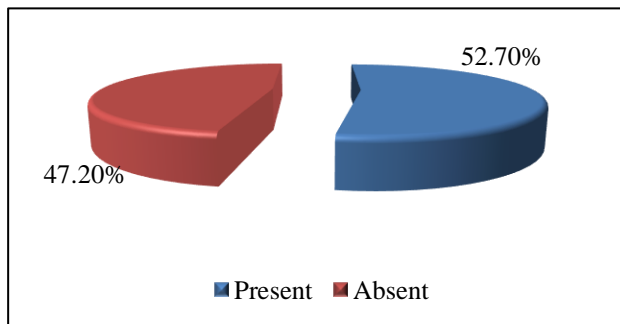


Figure 4: Distribution of optic disc hyperemia.

Out of 36 patients, 19 (52.7%) had optic disc hyperemia, 17 (47.20%) had no optic disc hyperemia.

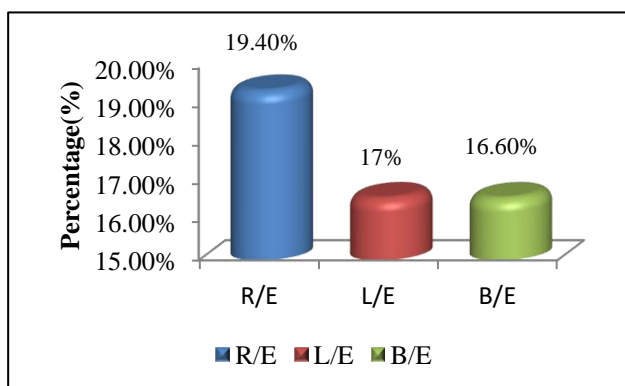


Figure 5: Laterality of optic disc hyperemia.

Out of 36 patients, 7(19.4%) had right eye optic disc hyperemia, 6(17%) had left eye optic disc hyperemia and 5(16.6%) had both eye optic disc hyperemia. Therefore right eye was more commonly affected.

Out of 36 patients, 1(3%) patient had retinal hemorrhages and 35(97%) patients did not.

Therefore involvement of posterior segment is common in Acute Encephalitic Syndrome and the patients must be scheduled for a routine ocular examination and follow up in all these cases.

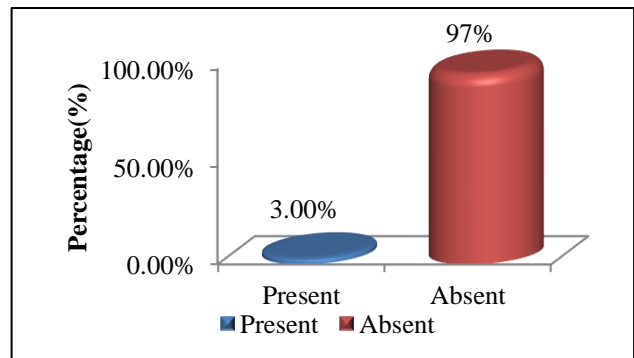


Figure 6: Distribution of retinal hemorrhages.

DISCUSSION

Age distribution

According to a study carried out by Dev et al in 2019, 49% of cases were confirmed as JE in North east India.³ Cases were significantly higher in the age group <15 years with M:F ratio of 2:1.³

In our study, out of 36 cases, most commonly involved age group was 5 years (15 patients) that is comparable to the other studies. Ponprasart et al in 1989 in their study on 59 Japanese Encephalitis affected children, found most commonly involved age group as 6-14 years.⁴ Pachapure et al in 2014 found out of total 57 patients 19 were below 20 years (33.33%) and 38 cases were above 20 years (66.7%).⁵ Singh R et al in 2017, showed maximum number of children were in the 6-10 year of age group, 47 children which covers 38.97 % cases.⁶

Hellgren et al in 2017 showed that out of 3 patients that were examined 2 were in the age group of 3-4 years and one was 15 year old.⁷ Reddy et al showed maximum number of cases i.e 55 (55%) were in the 15-40 years age group.⁸

Sex distribution

In our study, out of 36 patients 23 were males and 13 were females that was relatable to the other studies. Ponprasart et al in their study in Japanese encephalitis affected children in Thailand in 1989 found male: female ratio to be 1.18:1.4

Another study on predictors of vision deterioration in 2010, carried out by Sinha Kumar Manish et al in

Chatrapati Shahuji Maharaj Medical University, Lucknow shows male: female ratio to be 59:42.⁹

Pachapure et al in 2014 also showed a higher incidence of ocular manifestations in males, 30 cases (52.6%), and 27 cases of females (47.4%).⁵ Singh et al in 2017 showed 58.47% (69 children) of total cases were male and 41.53% (49 children) of cases were female.⁶ Hellgren et al in 2017 showed that out of 36 patients 3 were affected and the ratio of male: female was 2:1.⁷

Posterior segment changes

In our study, papilledema was found in 16 (44.4%) patients. Optic disc hyperemia was found in 19 (52.7%) patients and retinal hemorrhage in 1 (3%) patient that was comparable to the below mentioned studies. Ponprasart et al in 1989 found papilledema in 22% cases in 59 children of Japanese Encephalitis.⁴

Kumar M et al in 2010 found papilledema in 31 cases (30.7%).⁹ Chaudhary M et al in 2012, found fundus changes in 35.72%, papilledema in 11.43%, optic atrophy (22.86%), retinal hemorrhage (1.43%).¹⁰ Pachapure et al in 2014, found fundus changes in 19 patients (33.3%).⁵ Out of which papilledema was present in 19 patients (33.3%) and retinal hemorrhage in 3 patients (5.3%).

Limitations

Posterior segment signs were based on clinical examination only, therefore were subjective and no objective examination could be carried out due to severely ill and unconscious condition of most patients, follow up was not included due to terminal nature of the disease in most cases.

CONCLUSION

The presence of posterior segment changes in acute encephalitic syndrome can lead to morbid ocular sequelae and complications. Therefore detecting them at an early stage and adequate and timely intervention helps in preserving the eye functions.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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