

Original Research Article

Clinical profile and neuropsychological assessment of childhood absence epilepsy: a descriptive study

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ABSTRACT

Background: The objectives of the study was to observe the clinical profile and neuropsychological assessment of childhood absence epilepsy.

Methods: Children attending Neurology Department of tertiary care hospital diagnosed with Childhood Absence Epilepsy underwent validated structured proforma. Neuropsychological assessment included IQ, Behaviour and learning disability. Comparison was made between group with mono and dual therapy.

Results: Number of children studied was 29 with mean age of 6.24years. 20 (68.9%) children were treated with Sodium Valproate. 9 (31.1%) required add on therapy with Lamotrigine. Seizures were well controlled in all children. Mean IQ derived was 101.6 which mean average IQ. Mean CBCL was 25.1 indicating increased behavior problems. There was significant co morbidity like Inattentiveness in 18 (62.1%), Inadequate language ability in 14 (48.3%), Inadequate arithmetic ability in 12 (41.4%) and visual memory was Inadequate in 9 (31%).

Conclusions: Though Children with Absence Epilepsy has average or above average IQ, it is associated with significant co-morbidity which if addressed early can improve the long-term outcome. IQ and behavior has statistically significant association with the numbers of drugs.

Keywords: Behavior, Childhood absence, Epilepsy, IQ

INTRODUCTION

Epilepsy is the commonest neurological condition affecting people of all ages, race and social class. It is broadly classified into generalized and focal seizures. Childhood Absence Epilepsy (CAE) is classified under generalized seizures.¹

It is one of the most common pediatric epilepsy syndromes.² It appears more frequently in girls than boys.³ It has been considered to be benign epilepsy and usually associated with average or above average IQ.⁴

Growing literature rejects the past perceptions of CAE as benign which was partly attributed to the brief episodes of epileptic activity and remission for most children by mid adolescence.

More recently it has been shown that CAE is associated with attention, behavioral, cognitive and affective conditions that may persist into adulthood.⁵⁻⁷

Visual memory has been reported to be weak in children with absence seizures when compared to other epilepsy.⁸ The outcome of CAE in general is good with spontaneous remission in half of children by teenage.

METHODS

This descriptive study was conducted at the Neurology Department of tertiary care hospital from September 2012 to December 2014. The study was approved by the Institutional ethics committee. Informed consent was obtained from the parent or guardian. Children aged 4 to 10 years with symptoms and EEG findings consistent with CAE were included in the study. Each child then underwent a detailed history of the basic demographic details including age, sex, developmental milestones, history of seizures, age of onset, duration, frequency of seizures (parents perception), time to seek medical attention, family history and use of antiepileptic drug (AED followed by neurologic examination. Details of neuroimaging if done already were noted.

All children underwent standardized psychiatric evaluation that included a semi-structured interview and Neuropsychological Assessment was done by clinical psychologist. Binet Kamat Test was used to assess IQ. This test is standardized for Indian population. Behavior score was measured using Revised Child Behavior Checklist (CBCL). CBCL is considered to have adequate criterion related validity. Normal score is 24. Higher the score higher is the behavior issues. Benton Visual Retention Test (BVRT) was used to analyze Visual Memory. NIMHANS Index was used to assess Language, Arithmetic and Attention problems. Data was entered in to Microsoft Excel and analyzed using Statistical Package for Social Scientists version (SPSS) 17.0 software. Statistical analysis was done using Students t test and Chi square test. p value <0.05 was considered statistically significant.

RESULTS

Study consisted of 29 children. Among them 15 were female and 14 were males. Mean age of onset of seizures was 6.24 years. 51.7% of children experienced 10-20 episodes per day.

Table I Clinical characteristics of CAE.

Clinical features	No. (%) (N=29)
Mean Age of onset (year)	6.24
Females	15 (51.7)
No. of episodes per day	10-20 (51.7)
Time delay in medical advice (mo)	1-6 (55.2)
Family history of seizures	9 (31)
Febrile Seizures	6 (20.7)
Consanguinity	4 (13.8)
Neuroimaging- CT/MRI	6/2
Add on drug (LTG)	9 (31)
Duration of add on (mo)	18-24

No: Number, LTG: Lamotrigine

There was significant delay in seeking medical attention from the time of onset of seizures. 55.2% sought intervention between 1-6 months. Family history of

seizures was positive in 31% of cases. We have not done genetic evaluation due to financial constraint. Incidence of febrile seizures was high (20.7%). All children were treated with Sodium Valproate (SVP).⁹ 31% (9) of children, in whom seizures were not controlled, required add on therapy with Lamotrigine (LTG).¹⁰ Seizures were under control in all the children (Table 1).

65.5% (19) children had average IQ (90-109). Maximum IQ was 130 in 4 children and minimum was 50. Mean IQ derived was 101.6. Behavior score of more than 24 was noted in 37.9% (11) children. Among these children 45.4% (5/11) had below average IQ and 1 had high IQ. Mean CBCL was 25.1. There was statistical significant association between IQ and CBCL with the number of drugs (p<0.05). 62.1% (18) noted to have Inattentiveness and 48.3% (14) had Language problems. Arithmetic ability was affected in 41.4% (12) while Visual Memory was Inadequate in 31% (9) of the children. There is no statistical significant association between number of drugs used and its effect on Language, Arithmetic, Attention and Visual Memory (Table II).

Table 2 Neuropsychological assessment of CAE.

Variables	Test	P value
Mean IQ	101.6	t = 2.74
Mean CBCL	25.1	t = 2.60
Inattentiveness	18 (62.1%)	0.771
Inadequate language	14 (48.3%)	0.779
Inadequate arithmetic	12 (41.4%)	0.36
Inadequate visual memory	9 (31%)	1.09

DISCUSSION

Present study supports the previous literature, in stating that CAE is associated with significant co morbidities. There is a significant delay in seeking medical advice as the seizure is mistaken to be habitual behavior or day dreaming.¹¹ Though the Mean IQ in the study was average (101.6) there is an increased risk of Inattentiveness, Language and Behavior problems.⁷ It's an ongoing debate whether behavior problems are a part of epilepsy syndrome or develop as a consequence of disease factors.¹² Recent findings suggest that CAE not only affects sub cortical structure but also disrupt regions of frontal cortex, cingulate and thalamus.¹³ This might explain the involvement of Behavior and Attention problems in CAE. Relatively small sample size might explain why we found no statistical significant association between psychological variables and number of drugs. Healthy control group would have added value in comparison. Classically, CAE begins between 4 and 10 years of age, with a peak at 6-8 years.¹⁴ In present study also mean age of onset of seizures was 6.24 years. Females are affected more than the males. Pavone et al studied 16 children with CAE and reported a mean IQ of 90.8 as compared to IQ of 101.6 in present study. Current study showed increased rate of behavior, inattention and

visual memory problems.¹⁵ Similar to Caplan et al. CAE children had linguistic difficulties. It is 48.3% as compared to 43% in the previous study.

CONCLUSION

We already know absence seizures is associated with significant co-morbidities. What this study adds to the overall information is that there is a decrease in IQ and increase in Behaviour Score in children with dual therapy for absence seizures as compared to monotherapy group. To conclude children with absence epilepsy should be screened for associated neurocognitive problems like attention, language and learning disability. Simple use of semi structured interview with the parent and child will determine the existing behavior problems, which if addressed early will lead to better outcome. These children are being followed up, to assess their long term outcome.

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