

Study of EEG in Autism

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Abstract

Samples of 50 children, in which 25 normal and 25 autistic, in the age group of 1-10 years were taken for studying EEG changes in autistic children. EEG changes were studied in the form of EEG pattern, i.e. generalised, focal, or normal pattern, According to CHILDHOOD AUTISM RATING SCALE, IQ was determined, and autistic children were classified as mild, moderate and severe autistic children.

INTRODUCTION

Autistic disorder is the commonest of the pervasive developmental disorders. (1).

Autism is a neurodevelopmental disorder that is behaviorally defined. The behavioral manifestations that define autism include qualitative deficits in social interaction and communication and restricted repetitive and stereotyped patterns of behavior, activities, and interest. (2).

Infantile autism was described for the first time by Leo Kanner in 1943 as 'autistic disturbances of affective contact'. This syndrome has variously been described as autistic disorder, pervasive disorder, childhood autism, childhood psychosis and pseudo defective psychosis. (3).

The first electroencephalographic study in autism was published in 1964, and it reported EEG abnormalities in 58% of the autistic children studied. (4).

Presently the cause of infantile autism seems to be predominantly biological. Earlier reports of cold, 'refrigerator' mothers causing autism in their children have not been substantiated. (5).

Autism is more common in [3-4 times] in males and has a prevalence rate of 1.4 per 1000 population. In 1949, Hunter and Jasper reported a method of simultaneously recording EEG and clinical seizures by a movie camera. Goldensohn in 1966, for the first time used closed circuit television for simultaneous recording of clinical seizures and EEG.

MATERIALS AND METHODS

After obtaining ethical clearance, a proper written informed consent was taken from the parents of autistic children.

In the present study, different EEG patterns were assessed. The present study was carried out in department of physiology, M.G.M, S MEDICAL COLLEGE, AURANGABAD. Autistic children in the age group 1-10 years were taken in a group. To be included in the

study, children were diagnosed patients of autism. Excluded from this study, children with other mentally disorder.

Methods

ELECTROENCEPHALOGRAPHY

The quantitative referential 20 –channel EEG data were collected using international 10-20 system for electrode placement including the central locations. Electrode placements were made using an electrode Cap, and electrogel conductive gel. Linked ear electrodes were used as reference. EEGS were assessed by Two doctors indepently. EEG was done at the morning.as autistic children are hyperactive, sedatives were given to all patients and EEGS were recorded in sleeping condition.

CHILDHOOD AUTISM RATING SCALE

This scale is one of the most widely used assessment tool in the united states. Scores of CARS is used in identifying subgroups of autistic children. According to score of CARS ,autistic children were classified as Mild, moderate, and severe autistic children. The scale is used to observe and subjectively rate fifteen items. These items are relationship to people, imitation, emotional response, body and object use, adaptation to change, visual response, listening response, taste-smell-touch response and use, fear and nervousness, verbal communication, non-verbal communication, activity level, level and consistency of intellectual response and general impressions.

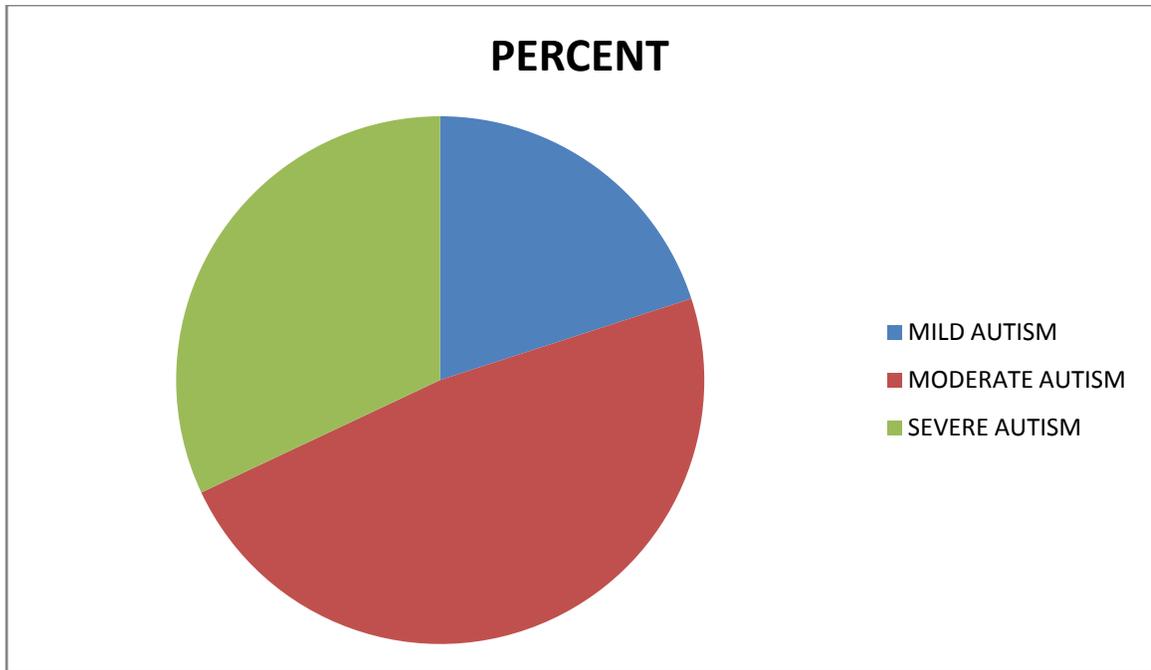
OBSERVATIONS

According to CARS scale, autistic children are classified into three catagories.

1. Mild -20%, 2.Moderate autistic-48%, 3.Severe autistic-32%

TABLE No .1

| TYPE OF AUTISM | EEG ABNORMALITIES | | |
|--------------------|-------------------|-------|--------|
| | GENERALISED | FOCAL | NORMAL |
| 1 .MILD AUTISM | 4% | 8% | 8% |
| 2 .MODERATE AUTISM | 16% | 24% | 8% |
| 3. SEVERE AUTISM | 16% | 12% | 4% |



DISCUSSION

Electroencephalography refers to the study and analysis of electrical fields of brain, recorded by amplifying voltage differences between electrodes placed on scalp or cerebral cortex or brain. The intensities of brain waves recorded range from 0 to 200 microvolt, and frequency range from 1 to 50 per second. Some studies suggest that epileptiform discharges on EEG without clinical seizures can cause behavioural and cognitive impairment (6 and 7)

In the previous studies it was found that, pattern of epileptiform abnormalities is highly correlated to Severity of autism. Our results show that generalized and focal EEGs are found at a higher rate in moderate and severe Type of autistic patients. Gabris et al found that abnormal EEGs and epilepsy occurred at significantly higher rates in children in the more impaired range of autism spectrum. [P < 0.05]. (8).

Frank Duffy and Heidelise found that subjects with autism had consistent EEG patterns indicating altered connectivity between brain regions generally, reduced connectivity as compared with controls.

From these findings we can suggest that EEG is one of the neurological investigative technology. It is necessary to advice autistic children to do routine EEG, so that mild and moderate autistic patients will not changed into severe.

CONCLUSION

Different EEG patterns were seen according to severity of autism. Mild cases EEG commonly will be normal, while generalized and focal EEGs were common in mild and moderate autism.

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