

A Study on Pediatric Epilepsy and its main Psychiatric Comorbidities

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Abstract

Background: Epilepsy is a common neurological problem. It has deleterious effects on the developing brain leading to significant psychosocial and economic burden. It is a treatable neurological problem and judicious approach will lead to early diagnosis and treatment, thus preventing significant morbidity. This study aims to study the psychiatry comorbidities in epilepsy children.

Methods: This study was conducted as a comparative study in Department of pediatrics in collaboration with Department of Psychiatry, S.P. M.C Bikaner (Rajasthan) from 2015 January to 2015 September. All the patients and control group were evaluated on Revised Child Anxiety and Depression Scale All the collected data was tabulated and statically analyzed by using SPSS software.

Results: In the case group 62% of the patients were having one or more of the psychiatric problem, including major depression, anxiety, behavioral problem or low I.Q. (<80), while the same in the control group was found to be 36% with significant p values. It was found that males were having more psychiatric problem. In our study, 30.8% patients were found to have depression as compared to 12% in the control group and anxiety was found twice (36%) in the case group as compared to control group (18%).

Conclusion: Depression, anxiety and behavioral problems are present in large rates in the epileptic patients. Hence involvement of a psychiatrist while dealing with a patient of epilepsy can be done for early recognition and treatment of the disease.

Keywords: Anxiety, Bikaner, Depression, Epilepsy, Psychiatry morbidity.

Introduction

Epilepsy is a common neurological problem. It has deleterious effects on the developing brain leading to significant psychosocial and economic burden. It is a treatable neurological problem and judicious approach will lead to early diagnosis and treatment, thus preventing significant morbidity. A seizure or convulsion is a paroxysmal, time-related change in motor activity or behavior that results from abnormal electrical activity in brain⁽¹⁰⁾. Less than one third of seizures in children are caused by epilepsy, a condition in which seizures are triggered recurrently in brain⁽¹⁾. For epidemiological classification purposes, epilepsy is considered to be present when two or more unprovoked seizures occur at an interval greater than 24 hours apart⁽¹⁾. Furthermore, there are some data to support a relationship between seizure frequency and anxiety, whereby increased levels of stress and anxiety appear to escalate the frequency of seizures⁽²⁾. In the north western part of Rajasthan (Bikaner) no study was done to know the psychiatry morbidity in epilepsy children. Hence this study was taken up know the psychiatry morbidity in epilepsy.

Material and Method

This study was conducted as a comparative study in Department of pediatrics in collaboration with Department of Psychiatry, S.P. Medical College & Associated Group of Hospitals Bikaner (Rajasthan) from 2015 January to 2015 September. The institutional

ethical committee approved our study. All the patients of age group 6-12 years admitted with complaints of seizures were included in the study. A control group of similar socioeconomic status was studied for comparison. All the patients included in the study were subjected to detailed history and thorough clinical examination as Performa. The patients under study were categorized into various epileptic syndromes as defined by International League against Epilepsy (1989)⁽³⁾. All the patients and control group were evaluated on Revised Child Anxiety and Depression Scale (**RCADS**). **RCADS** comprises of 47 items which are rated on 4 point scale with response: never, sometimes, often and always. The items are scored on six sub-scales which are labeled according to DSM-IV disorders. Regarding reliability, the test-retest correlations across a 1 week interval ranged from 0.65 to 0.80. Regarding validity, RCADS Major Depression correlated higher in with another self-report of depression. All scales of RCADS correlated positively with another self-report of anxiety. All the collected data was tabulated and statically analyzed by using spss software.

Results

In the case group 62% of the patients were having one or more of the psychiatric problem, including major depression, anxiety, behavioral problem or low i.Q. (<80), while the same in the control group was found to be 36% with significant p values. It was found that

males were having more psychiatric problem as compared to females. In this study, it was found that rate of psychosocial disorders is in the range of 26.2% of children with uncomplicated epilepsy and 56% in children with complicated epilepsy. It was found that males were having more psychiatric problem as

compared to females. In our study, 30.8% patients were found to have depression as compared to 12% in the control group with significant p values (0.03). In our study, anxiety was found twice (36%) in the case group as compared to control group (18%), but the p values ($p=0.072$) were insignificant.

Table 1: The sex distribution and clinical data of patients of epileptic syndromes with psychiatric problems

	Males (%)	Females (%)
Generalized (51.1%)		
West syndrome(n=0)	0	0
Syndrome of grandma(n=12)	9(75)	3(25)
Juvenile myoclonic epilepsy(n=2)	2(100)	0
Absence seizures(n=2)	1(50)	1(50)
Partial seizure (48.1%)		
Simple partial seizures(n=12)	9(75)	3(25)
Complex partial seizures(n=3)	2(66.6)	1(33.3)
Total	23(74.2)	8(25.8)

Table 2: comparison of generalized seizure group and control group on basis of prevalence of depression and anxiety

	Case group	Control group	Total
Depression			
Major depression present	8(33%)	6(12%)	14
Major depression absent	16(67%)	44(88%)	60
Total	24	50	74
Anxiety			
Anxiety present	10(42%)	9(18%)	19
Anxiety absent	14(58%)	41(82%)	55
Total	24	50	74

Discussion

The relationship between epilepsy and psychiatric disorders has been recognized since antiquity and is still a topic of many investigations that may lead to expanding our understanding of the brain- behavior relations. However, much remains still unclarified about this relationship. Many studies on psychiatric comorbidity in epilepsy have been performed using many different patient groups and diagnostic instruments. To find any association between epilepsy and psychiatric problems, a study was planned in the department of pediatrics. In this study a case group and a control group were taken. 50 patients in the case

group were taken either who were admitted in the hospital or who were visiting the hospital for follow up. Patients with seizures having some dyselectrolytemia, infection and simple febrile convulsion, pyogenic & tuberculosis meningitis were not included in the cases. A control group of 50 patients was also created with same socioeconomic status of the case group patients. Case group and control groups were studied and compared on the basis of their psychiatric problems. Appropriate tests were done to compare case group and control groups. Case group was further divided into generalized group and partial group and subgroups were compared with the control group through chi square test. Patients of the case group were divided on the basis of compliance of treatment, frequency of seizures per year and their psychiatric problems were compared with the control group.

In our study, in the case group, there were 35 males and 15 females. In the control group, there were 33 males and 17 females. Case group was categorized on the base of age and gender. Case group was further classified into different epileptic syndromes. Case group and control group are further classified on the basis of age distribution. Case group was then divided on the base of frequency of seizures per year, compliance, generalized and focal seizures.

In the case group 62% of the patients were having one or more of the psychiatric problem, including major depression, anxiety, behavioral problem or low i.Q. (<80), while the same in the control group was found to be 36% with significant p values. Some researchers claimed that cognitive function in children with epilepsy is skewed towards the lower end⁽⁴⁾. In population-based studies of children with epilepsy; the frequency of mental retardation has been reported to be 24-41%^(5,6,7). In a recent epidemiological survey of 5-15 year-old children with epilepsy from Great Britain, reported that prevalence rate of psychiatric disorders was 37% in children with epilepsy, 11 % in children with diabetes mellitus, and 9 % in controls⁽⁸⁾. In this study, it was found that rate of psychosocial disorders is in the range of 26.2% of children with uncomplicated epilepsy and 56% in children with complicated epilepsy. In a population-based study from Rochester, Minnesota, Hedderick & Buchhalter (2003) found comorbid psychiatric disorders defined by DSM-IV in 51% of children with epilepsy⁽⁹⁾. Another study, it was found that psychosocial problems were frequently unrecognized or untreated. Psychiatric diagnoses based on DSM-IV criteria were found in 61 % of the children.

Patients with psychiatric problems were classified into males and females. It was found that males were

having more psychiatric problem as compared to females. This may be due to more number males having epilepsy itself. Depression is a common, but frequently overlooked problem in children with epilepsy. In our study, 30.8% patients were found to have depression as compared to 12% in the control group with significant p values (0.03). In one study, it was found that 26% of children with epilepsy had symptoms of depression⁽¹⁰⁾. In another study, prevalence of depression was found in 23 % of patients with epilepsy. In another study depression was found in 29 % of epileptic children and suicidal ideation was noted in 17 % and more often in adolescents than in children⁽¹¹⁾. In our study, prevalence of depression was comparable to other studies. In our study, anxiety was found twice (36%) in the case group as compared to control group (18%), but the p values ($p=0.072$) were insignificant. In one study, anxiety was found in 42% of the patients with epilepsy⁽¹²⁾. In another study, it was found that, anxiety is present in 32 % of the childhood epilepsy⁽¹¹⁾. In Children and adolescents with epilepsy have a higher prevalence of comorbid psychiatric symptoms such as inattention, hyperactivity, aggressiveness, and anxiety compared to children in the general community?⁽¹³⁾.

Epilepsy is often associated with psychosocial problems such as parental over-protection, peer teasing and bullying, and fear of seizures⁽¹⁴⁾. Experiencing seizures at school, learning problems, and imposed limitations on participation in sports, playground activities, and driving (a rite of passage) may further limit normal peer interaction and social development⁽¹⁵⁾. Our study, the rates were comparable to earlier studies, although with insignificant p values. Further case group was divided into generalized seizure group and partial seizure group. Generalized and partial groups were divided on the basis of major depression, generalized anxiety and compared with the control group. Earlier studies have shown that depression is more common in patients of partial seizures than in generalized seizures⁽¹⁶⁾. In our study, there was not much difference between generalized group (33%) and partial group (30.8%). When each of the group was compared with control group, the results were not significant in both cases. (Generalized group $p=0.06$ and partial group $p=0.328$). Generalized anxiety is present in 42% in generalized seizure patients ($p=0.05$) and 26.9% in partial seizure patients ($p=0.543$) as compared to 18% in the control group, p values in the generalized group were significant and in the partial group, it was also not significant. In one study, generalized anxiety was commoner in the general seizure and absence seizure group as compared to the partial seizures⁽¹⁶⁾. In our study, similar findings were found. It was found that in patients with good compliance, 60% of the patients either had any psychiatric problem or low IQ while patients with poor compliance had this rate up to 85.7% ($p=0.174$). It has been seen that patients taking their AED at proper time and proper dose are having good

control of seizures and rate of depression & anxiety are low in those patients⁽¹⁷⁾. Patients of the case group were further classified on the basis of frequency of seizures and psychiatric problems associated with it. In patients with high frequency (3 per year) 92.3% of the patients were having either some psychiatric problem or low IQ as compared to 51.6% in the low frequency (<3 episodes per year) ($p=0.024$). Frequency of seizures has been found to be correlated with behavioral problems in children with epilepsy^(18,19). Furthermore, there are some data to support a relationship between seizure frequency and anxiety, whereby increased levels of stress and anxiety appear to escalate the frequency of seizures⁽²⁰⁾. Patients in the case group were classified on the basis of duration of the disease. It was found that in patients with 2 years of disease duration prevalence of psychiatric problem was 6 1.5%, in 3 to 4 year of disease duration 52.6% and in 5 to 6 of the patients it was found to be 75% ($p=0.460$).

Conclusion

As compared to normal population. There is correlation between high frequency rate of seizures and psychiatric problems. So proper drug treatment with proper doses should be taken. Psychological and cognitive factors are apart from control of seizures must be kept in mind to determine how well a child with epilepsy progresses towards independence. Depression, anxiety and behavioral problems are present in large rates in the epileptic patients. Hence involvement of a psychiatrist while dealing with a patient of epilepsy can be done for early recognition and treatment of the disease.

Limitations of Study

In our study sample size was small; more sample size is needed avoid bias in study. In our study follow-up was not done in psychiatry morbidity associated children to cross check the diagnosis.

Reference

1. Nelson text book of Pediatrics. Seizures in childhood, Edition 19th. 2012;586:2013.
2. Vazquez B, Devinsky. Epilepsy and anxiety. *Epilepsy & Behavior*. 2003;4:20-25.
3. Commission on classification and Terminology of the International League Against Epilepsy (ILAE). Proposal for revised clinical and electroencephalographic classification of epilepsies and epileptic syndromes. *Epilepsia*, 1989;30:389-99.
4. Sillanpaa M. Medico-social prognosis of children with epilepsy. *Epidemiological study and analysis of 245 patients*. *Acta Paediatr Scand* 1973;3:104.
5. Kinsman SL, Vining EPG, Quaskey SA, Mellits D, Freeman JM. (1992). Efficacy of the ketogenic diet for intractable seizure disorder. Review of 58 cases. *Epilepsia*, 1992;33:1132-1136.
6. Braathen G, Theorell K. A general hospital population of childhood epilepsy. *Acta Paediatr Scand*. 1995;84:1143-1146.

7. Sidenvall R, Forsgren L, Heijbel J. Prevalence and characteristics of epilepsy in children in Northern Sweden. *Seizure*.1996;5:139-146.
8. Singhi PH, Bansal U, Singhi S, Pershad D. Determinants of IQ profile in children with idiopathic generalized epilepsy. *Epilepsia* 1992;33:1106-1114.
9. Davies S, Heyman I, Goodman R. A population survey of mental health problems in children with epilepsy. *Dev Med Child Neurol*. 2003;45:292-295.
10. Ott D, Siddarth P, Gurbani S, Koh S, Toumay A, Shields WD, Caplan R. Behavioral disorders in pediatric epilepsy: unmet psychiatric need. *Epilepsia*, 2003;44:591-597.
11. Aiwash RH, Hussein MJ, Matloub FF. Symptoms of anxiety and depression among adolescents with seizures in Irbid, Northern Jordan. *Seizure* 2000;9:412-416.
12. Oguz A, Kurul S & Didrik E. Relationship of epilepsy-related factors to anxiety and depression scores in epileptic children. *Child Neurol*. 2002;17:37-40.
13. Novick BZ, Arnold M. *Fundamentals of clinical child neuropsychology*. Philadelphia, PA: Grune & Stratton.1988.
14. Neurobehavioral abnormalities in epilepsy. In Y. Frank (Ed.), *Pediatric behavioral neurology* (pp.269-287). Boca Raton, FL: CRC.
15. Hartlage PL, Hartlage LC. The neuropsychology of epilepsy: Overview of psychosocial aspects. *Handbook of clinical child neuropsychology*. 2nd edition. New York: Plenum Press.1997:506-516.
16. Austin K, Harezlak, Dunn DW, Huster GA, Rose DF, Ambrosius WT. Behavioral problems in children before first recognized seizure. *Pediatrics*.2001;107:115-122.
17. Arzimanoglou A, Guerrini R, Aicardi J. *Aicardi's Epilepsy in children*, 3rd edition, by Lippincott Williams & Wilkins. 2006;143.
18. Bastiaansen D, Koot H M, Ferdinand RF. (2005). Psychopathology in children: Improvement of quality of life without psychiatric symptom reduction? *European Child & Adolescent Psychiatry*. 2005;14:364-370.
19. Austin J K, Risinger MW, Beckett LA. (1992). Correlates of behaviour problems in children with epilepsy. *Epilepsia*, 1992; 33:1115-1122.
20. Lambert MV, Robertson MM. (1999). Depression in epilepsy: Etiology, phenomenology and treatment. *Epilepsia*, 1999;40:21-47.