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Tipu Sultan

Institute of Child Health & Children's Hospital, Lahore, tipusultanmalik@hotmail.com

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BEHAVIORAL CHALLENGES IN CHILDHOOD EPILEPSY

Tipu Sultan

Consultant Pediatric Neurologist Department of Pediatric Neurology Institute of Child Health & Children's Hospital, Lahore

Correspondence to: Email: tipusultanmalik@hotmail.com

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ABSTRACT

Behavioral problems among children with epilepsy is one of the most common problem. Severity of the problem ranges from 16% to 77% as compared to 9% in the general pediatric population. Such a huge variation in the results reflects probable difference in the methodology. Structured interviews that include parents, children and clinician's reports have identified a higher rate of behavioral problems when compared to self-report instruments. Higher rates are reported in clinical samples recruited from tertiary care medical centers, where they have a lot of referrals from the peripheral small units. Most researchers agree that children with epilepsy have three to nine times higher risk of behavioral problems as compared to healthy controls and children with non neurological disorders. We searched pub med with key words epilepsy in children (41061), psychological problems in children (13523) and psychological problems in children with epilepsy (240). Out of these 240 articles, 35 were selected for reviewed. This review article reflects that if we look into our local experience, perhaps we are also facing the same kind of spectrum in terms of behavioral problems in children with epilepsy.

INTRODUCTION: Chronic illnesses increase the risk behavioral problems many folds as compared to healthy population.¹ This risk increases with chronic central nervous system disorders due to an underlying brain dysfunction. Recent reports proved that these children are at an increased risk of a broad range of emotional and behavioral problems as compared to both healthy controls and children with non-neurological chronic illnesses.^{2,3} Keeping in view these statistics, we should not wonder if our patients had developed these psychological and behavioral problems.⁴

Past studies report a higher incidence of psychopathology, especially the emotional problems in children with epilepsy as compared to healthy controls. It has been found that 37% of children with epilepsy have some kind of psychological problem. Vulnerable period for the development and course of psychopathology in children has not been systematically investigated. Newer data, which may become available with the passage of time, may be of some help. Interestingly, both epilepsy-related and pre-existing family variables correlated significantly with

behavioral problems in children with new-onset epilepsy.⁵

Types of behavioral problems include total internalizing and externalizing problems, internalizing problems being the most prevalent.⁶ Studies using structured diagnostic interviews identified attention deficit disorder, depression, and anxiety as the most commonly associated problems. Thus, internalizing and attention problems, identified by both self-report and structured psychiatric instruments in the community-based samples, are the most commonly identified problems in children with epilepsy.⁶

Children with new-onset epilepsy had higher internalizing, thought, and behavioral problems than their siblings, but the greatest difference is found in total behavioral scores. In this review, issues of behavior and attention-deficit hyperactive disorder (ADHD) were addressed and it has been found that they are significantly associated with seizures recurrence even when child's demographic, and seizure variables were controlled. This finding suggests that there may be a common neurological dysfunction to both the seizures and behavior.⁷ Similarly, another

study reported more behavioral difficulties with new-onset idiopathic epilepsy as compared to healthy controls both at baseline and over time. During long term follow-up, it has been found that significant number of children had behavioral problems as compared to controls. Finding of current study suggests that behavioral problems were not persistent in the same individual child over time.⁸

Preexisting and ongoing family problems and parenting difficulties strongly predicted behavior problems both at the onset of epilepsy and at follow-up.⁹ The above-mentioned family problems were found to be more predictive rather than seizure related variables supporting these findings related to new-onset seizures. Longitudinal studies of chronic epilepsy have found that externalizing and internalizing problems identified in the childhood may continue into the adolescence as well.¹⁰ In a 4-year prospective study Austin et al also demonstrated higher rates of behavioral problems measured at baseline (57%) and after 4 years (49%).¹¹

In Pakistan, we have a joint family system and mothers are mainly responsible for upbringing of the children. In these circumstances their role is of prime importance not only in the grooming, but also in the disease management. So in this scenario, if mother herself is not well (particularly emotionally) then this will influence the care of the child badly. During the management of these children, it is believed that where ever there is a child with chronic problem, some kind of emotional disturbance at home may be expected.¹²

Parental psychopathology, poor parent craft, and an unstable family environment increase the risk of behavioral problems in children. Similarly, the quality of the parent-child relationship and parent craft has an important influence on child psychology.¹³ Family risk factors specifically related to psychopathology in children include the ability to organize the family environment, family adaptation to illness, parent-child relationship and maternal depression.¹⁴

The problem of psychosis in children with epilepsy is very well related to family risk factors. In children with new-onset epilepsy preexisting family problems and off-balance parenting after the diagnosis of epilepsy were stronger predictors of behavioral problems than epilepsy-related variables. Furthermore, poor family structure and insufficient parental confidence in establishing discipline have moderating effects on the child behavioral problems at the onset of epilepsy and two years later.¹⁵

The ongoing stress and complex demands of caring for a child with epilepsy may contribute to the worsening of family functioning and parenting abilities. Poor family adaptation to epilepsy and parental rejection of the

child predicted attention problems in children with chronic epilepsy. Poor relationships of mother with the elderly members of family are good predictors of impaired psychosocial adjustment in adolescence above and beyond their seizure status.¹⁶

In terms of parental psychopathology, the severity of maternal depression has a significant relationship to behavioral problems of children. Studies are needed to evaluate the role of father's psychological problems with psychopathology in children with epilepsy.¹⁷ Theoretical models of psychopathology propose that psychopathology stems from complex interactions between multiple etiological variables. Extensive research has been conducted investigating risk factors but inconsistent findings have been produced. Recent studies provide evidence for the moderating and mediating effects of family-related risk factors on the development of psychopathology.⁵

General risk factors such as the age, sex, and socioeconomic status have not been consistently associated with psychopathology.¹¹ However, the child's cognitive functioning and family risk factors have been consistent. General population with mild to moderate cognitive impairment has a higher rate of behavior problems as compared to those children who have normal cognition. Children with epilepsy have cognitive impairments, as well as difficulties with academic achievement. Epidemiological studies have examined how these variables contribute to the behavioral problems.¹⁸

During the past decade, only a few controlled trials have systematically examined the behavioral and cognitive side effects of AEDs. Although AEDs may produce cognitive side effects, it is unclear to what degree these cognitive side effects are associated with psychopathology. Therefore, available data regarding the specific effects of AEDs on the behavior are either insufficient or inconclusive. Newer AEDs have a safer cognitive profile, especially when prescribed in monotherapy.¹⁹ Lamotrigine does not appear to negatively affect cognition and behavior in cognitively normal children. Although oxcarbazepine does not impair cognitive functions in adults, its cognitive effects in children have not been studied.²⁰

Epidemiological studies demonstrate significantly higher rates of psychopathology in children with mental retardation than in CWE with an average IQ. Community studies of children with complex partial seizures who have an average IQ scores have found that verbal IQ better predicts the presence of psychiatric diagnosis rather than seizure related variables.²¹ These findings suggest that cognitive and linguistic co morbidities are integral components of epilepsy. Among pediatric population, parental psychopathology and an unstable

family environment increase the risk for psychopathology. Similarly, the quality of the parent-child relationship and parenting style has the strongest influence on behavior when other family factors, seizure-related variables, and child characteristics are controlled. Family risk factors have an enduring impact on behavioral problems throughout the course with new-onset epilepsy. The ongoing stress and complex demands of caring for a child may contribute to worsening of family functioning. Poor family adaptation and parental rejection predicted internalizing and attention problems in children. In terms of parental psychopathology, the severity of maternal depression has a significant relationship to psychopathology in CWE. Furthermore, mothers of CWE have higher rates of depression compared with mothers from a normative sample.²¹

A recent epidemiological study demonstrated a higher rate of psychosis in children with epilepsy (CWE) than in general population. An association with a family history of schizophrenia and psychosis was found. Unlike adults with epilepsy ictal and post ictal psychosis have been rarely described in children. In contrast, about 10% of children with complex partial seizures have an interictal psychosis. These children present with hallucinations, delusions, formal thought disorder, and poor seizure control but not with negative signs.²²

Psychotic symptoms in children are treated with neuroleptics other than phenothiazines and clozapine, which decrease seizure threshold.²³ A recent large case series in which risperidone was used for a variety of psychiatric diagnoses reported no increase in seizures. In a retrospective study, 70% of children treated with risperidone showed an improvement in self-injurious and aggressive behaviors and majority of children had no changes in baseline seizure frequency. The other atypical antipsychotic medications may be effective and safe however no published trials are available.²³

Epilepsy may be more common in children with ADHD compared with normal controls. In a population-based study from Iceland, children with ADHD had a 3.7 fold increased risk for seizures.²⁴ More attention problems are found in children with new-onset seizures than in siblings. In addition, epileptiform discharges have been found in 5% to 30% of children with ADHD, but the subsequent risk of seizures was low.²⁵ Problems with attention and ADHD appear to be specifically related to epilepsy and not just a response to a chronic illness. Children with epilepsy had more problems with attention than children with other chronic disorders, whereas the prevalence of mood and anxiety disorders is similar across different chronic conditions.²⁶

ADHD are frequently seen in children with epilepsy. Inattentiveness may partially explain the increased

prevalence of learning disorders in children with normal intelligence. After controlling for intelligence, attention was found to be a better predictor of academic success than memory, self-esteem and socioeconomic factors.²⁷ Incidence of ADHD in children with epilepsy is three to five times higher as compared to the general population.²² One group described a greater occurrence of the predominantly inattentive type ADHD (24%) than the combined type ADHD (11.4%) or the predominantly hyperactive impulsive type ADHD (2.3%).²²

The risk factors most consistently associated with inattentiveness are additional neurological deficits, intractable seizures and drugs like barbiturates and benzodiazepines.²⁰ Gender, seizure type or localization of seizure focus has consistently predicted ADHD. Seizure frequency may be an important risk factor because frequent nonconvulsive seizures (i.e. absence seizures) were associated with attention deficits and slow information processing.

Enhancement of seizure control and discontinuation of drugs when they demonstrate adverse affect on attention is recommended. Promoting sleep efficacy may also be helpful. Compared to controls, children with epilepsy have more disrupted sleep and more daytime sleepiness. Sleep problems have been associated to the problems with attention in these children.

The current practice parameters recommend stimulant medication for ADHD, but there are concerns about precipitation of seizures. So the combined consensus about the treatment was to continue the treatment with epilepsy and not to start another drug for behavioral modification. In case of an uncontrolled behavioral issue, start with one of the drug recommended for ADHD.²⁷

Although controlled studies are not available, but some studies have suggested that stimulants are probably safe in children with epilepsy and ADHD. Although other non-stimulant medications such as bupropion and tricyclic antidepressants can be effective in the treatment of ADHD, they should not be used in children because both bupropion and tricyclic antidepressants may lower seizure threshold. Limited data about use of atomoxetine (a new norepinephrine reuptake inhibitor) in ADHD reports that it does improve symptoms without the development of new onset seizures in children with ADHD. Although data is limited, it seems safe to conclude that stimulants are safe and effective in children with well-controlled seizures, in children with ADHD and abnormal EEGs, and are probably safe and effective in those with active epilepsy.²⁷ Atomoxetine may be a good alternative, although additional information is needed.

CONCLUSION

Behavioral problems in epilepsy are not an uncommon phenomenon. It is more prevalent in our country because of many social reasons. Moreover, persistence of psychopathology in childhood and poor long-term psychosocial outcome in adulthood are considerable problems for the youth living with epilepsy. Identifiable risk factors include attention, internalizing problems, thought problems and cognitive and linguistic deficits as integral components of childhood epilepsy.

Moreover, the quality of parenting, and parent-child relationships, rather than epilepsy-related variables have a significant effect on psychopathology in cognitively normal children when illness and child-related factors are controlled. Due to limited research, however, there is insufficient evidence regarding anti epileptic drugs and their association with psychopathology in intellectually normal children.

RECOMMENDATIONS:

Primary physicians should always follow the local guidelines for diagnosis and management. Despite the progress achieved during the past decade, we still need to increase our understanding of this complex process of epilepsy and behavioral issues.

In future studies, utilization of the new International League Against Epilepsy criteria, which classify epilepsy based on the underlying etiology rather than seizure types, may also expand our knowledge of the associations between types of epilepsy and specific behavioral syndrome.

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Tipu Sultan; concept, data collection, data analysis, manuscript writing, manuscript review