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SEIZURES PRESENTING AS ADHD: A CASE REPORT

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ABSTRACT

ADHD (Attention Deficit Hyperactivity Disorder) is a neurodevelopmental disorder that affects a large proportion of children. ADHD is associated with an

increased risk of seizures and is characterised by inattention, restlessness, and impatience.

A 6-year-old boy with ADHD presented to the Psychiatry Out-Patient Department with complaints of aggressive behaviour and restlessness. Trademark symptoms such as difficulty in sustaining concentration, not following instructions, running about, not being able to sit in one place, and verbally and physically abusive behaviour were noted in the patient.

Atomoxetine and Risperidone were prescribed for inattention and behavioural misconduct, respectively. Due to lack of improvement and a seizure suggestive incident an EEG investigation was instigated; it showed seizure activity for which Sodium Valproate was initiated for the same. Due to adverse effects, Oxcarbazepine was additionally included. Oxcarbazepine showed the most effective in treatment and progress continued with the intake of the drug. Currently, the boy is showing near total improvement and is on Atomoxetine 20 mg, Oxcarbazepine 600 mg and Sodium Valproate 400 mg, all of the above in divided doses.

This case report aims at highlighting the manifestation of unprovoked seizure activity in a patient previously diagnosed with ADHD with conduct disorder.

Several medical conditions in children mirror ADHD symptoms, making diagnosis difficult. For accurate treatment, it's crucial to rule out a differential diagnosis. With the help of this case, we can shed some light on the lack of knowledge and protocols in the management of hyperkinetic disorders, which has resulted in the spike of misdiagnosed cases across the country.

KEYWORDS

Attention Deficit Hyperactivity Disorder, Seizures, Epilepsy, Generalised Tonic-Clonic Seizures.

INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder that affects 7-9% of children and is associated with 6 symptoms of hyperactivity and impulsivity, or inattention (1). Symptoms that are severe enough to interfere with functioning are often noticed in school and at home before the age of 12 years. ADHD is known to have a strong genetic component with a greater risk in first-degree relatives of a patient with an ADHD diagnosis. Earlier research studies have shown that behavioural disturbances before the onset of the first seizure are common in children having unprovoked seizures (2). Spontaneous recurrent seizures are characteristic of epilepsy but can be a generalised condition in which seizures are one manifestation (3). Likewise, ADHD is also associated with increased vulnerability to educational and social disadvantages.

Recent research suggests that ADHD is a common comorbid condition in childhood epilepsy. However, there is very minimal information about the character, occurrence, and scheduling of corresponding neurobehavioural or psychological comorbidities, or the fundamental underlying cause of ADHD in epilepsy. A study of 75 children (ages 8-18) with new/recent-onset idiopathic epilepsy and 62 healthy controls conducted by Rosalind Franklin University of Medicine and Science, North Chicago, IL, USA found that children with epilepsy had a significantly higher rate of ADHD (31.5%) than controls (4).

In certain findings, ADHD and its epilepsy consequences seem to have a history before epilepsy assessment and indeed the first identified seizure, as in the case we've described. These cases may not have any obvious links to conventional

clinical epilepsy, individual variables, psychological symptoms (loneliness/depression), or discrepancies during pregnancy or childbirth.

To create policies and design effective interventions, it is necessary to first understand the scope of ADHD and associated conditions. As a result, the purpose is to find out how common ADHD comorbidity and associated variables are among epileptic children. In this report, we present an interesting case of ADHD with conduct disorder as well as seizure disorder, childhood-onset, initially presenting to the psychiatric out-patient department with typical features of the same.

CASE

Our patient was brought to the Psychiatry OPD at the age of 5 years with the chief complaints of restlessness and fever. One year later, he was observed to be overactive with growing restlessness and aggressiveness.

When the boy was two months old, his parents split, and he currently lives with his maternal grandmother (his primary caretaker) in Maharashtra. His mother remarried and now stays with her new spouse and children in Gujarat. An examination of his family history revealed that both his father and paternal grandfather has mental illnesses. His half-brother has recently been diagnosed with conduct disorder.

Course of disease:

He started schooling at the age of 6. In the classroom, he was said to be frustrated and irritable in class, pick fights with peers, and have poor social skills. Although he is of average intellect (IQ-81), he struggles with reading and writing, and he falls far short of all national literacy and numeracy standards. His academic underachievement challenges his motivation.

According to the grandmother, the child began to exhibit symptoms such as agitation, restlessness, poor attention span, being "always on the go", breaking things, and physical aggression toward the grandmother and classmates.

He had a lower tolerance for irritation and had trouble forming and keeping long-term relationships as well as reading nonverbal interactions. There have been several instances where violent behaviour has been displayed against the security guards of the hospital during the follow-up visits.

He was said to have had less sleep, was unable to concentrate on his studies, and was also seen banging his head on the floor for no apparent reason. He was unable to sit still. He also bites her, she claims. Later on, he feels guilty and apologizes for his actions. When he wasn't irritable, he was seen as a sensitive young boy who cared about his grandmother.

He was first diagnosed with ADHD when he was 6 years old and was started on Atomoxetine 10 mg per day, followed with Risperidone 1 mg per day to treat behavioural changes and irritability. The patient's inattention improved, but not his physical aggression or restlessness.

After 3 months of starting treatment, the child's grandmother reported that the child was not getting better with medicine. He was still occasionally physically aggressive and verbally abusive. Restless and irritable moods were also reported by his grandmother. The doses were gradually increased to 20 mg and 2 mg per day, respectively.

At 8 years of age, when the patient came for follow-up in the OPD, his grandmother complained of frequent destruction to property at home. His aggressiveness was said to be directed at his primary caretaker. He would mostly get aggressive with his grandmother.

The seizure activity was suspected in the patient due to an unexpected incident when at the bank with his grandmother. Unprovoked, the patient attacked a

security guard of a bank with a brick because of which he was severely wounded. Following the incident, the child had no recollection of the same.

On taking a detailed history from the grandmother, she disclosed that her grandson was from her daughter's first marriage which lasted briefly as her first husband deserted her. After the birth of the patient, his mother remarried and now stays in Gujarat with her second husband and has two sons from that marriage. The grandmother disclosed that the elder grandson from her daughter's second marriage is always ill and suffers from fits due to which the patient's mother is unable to visit them frequently.

In view of this history, the patient was sent to the neurology OPD to be assessed for further input by the Neurologist. An EEG and MRI was advised but due to financial difficulties the MRI could not be carried out. The EEG showed epileptiform activity for which the Neurologist started him on Sodium Valproate initially on a low dose. The dose was gradually increased and another EEG was done to assess treatment response as the patient's condition had only shown slight improvement.

The second EEG still suggested presence of epileptiform changes and hence the dose was further increased to maximum. As a result, the patient developed hyperammonaemia in the presence of normal liver enzymes (which has been covered in detail in another case report). Hence the medication was stopped briefly until his ammonia levels were back to normal. An MRI was also later conducted under a scheme offered by the hospital for the economically weaker section.

Patient showed a dramatic improvement and the last EEG was done to assess treatment response and did not suggest any epileptiform activity.

After consultation with the Psychiatrist, the Neurologists started him on low dose Valproate along with Oxcarbazepine and the patient is still being monitored by both departments at every follow up due to risks involved.

After the addition of Oxcarbazepine, the patient's behavior improved significantly, and he began attending school regularly, with no additional complaints from his teachers or peers. He continued to take his medications as prescribed. He was cooperative and was doing much better.

Currently, he shows near-total improvement in his symptoms, and he is maintaining well on Oxcarbazepine 600 mg/day, and Sodium valproate 400 mg/day and Atomoxetine 20mg/day.

DISCUSSION

ADHD affects 5-7% of children with typical development (5), but it affects 20-40% of children with epilepsy (6). Seizures are more common in children with ADHD, with around 14 per cent of children with ADHD experiencing seizures (7). In children with epilepsy, the most common disorder is attention deficit hyperactivity disorder (ADHD). According to studies, 30 to 40 in every 100 epileptic children have ADHD, compared to 7 to 9 in every 100 children with typical development (5). Also, rates were higher among the male children (66.7%) than among the females (33.3%) (8). In a study conducted in 2017 assessing the prevalence of ADHD and its comorbidities in children (6-12 years) with tertiary-level epilepsy, inattentive types of ADHD were more common in this patient population than aggressive or combined hyperactivity-impulsivity types (9). A similar prevalence rate of 23.4 per cent of children with epilepsy and concomitant ADHD was reported by outpatients in paediatric neurology in Karnataka (10).

Our 8-year-old patient was abusive with an aggressive character at the time of presentation. His final diagnosis is ADHD with conduct disorder presenting with masked seizures. He was given a trial of Risperidone, to alleviate behavioural symptoms of aggression. Risperidone was gradually tapered and stopped. He was also given Atomoxetine for hyperactivity and inattention and then when suspected by the psychiatrist, antiepileptic drugs like sodium valproate and oxcarbazepine were given for seizure activity.

It is difficult to say exactly how many children in the world have ADHD because different countries have chosen a different way to diagnose it.

ADHD is diagnosed according to the American Psychiatry Association's DSM 5 Standard Diagnostic Statistics and Manual (5th edition) criteria (11). In addition, the diagnosis & management of ADHD with or without epileptic episodes remains unspecified in the current psychiatric knowledge barrier.

Most epileptic characteristics do not change substantially amongst groups with and without ADHD, although ADHD is associated with an abnormal EEG. Epilepsy and ADHD affect children's IQ scores and make them hardly possible to attend school, with epileptic seizures being its main cause. It is correlated with adverse impacts on response hindrance, aggressive or disruptive behaviour, and parenting-related pressure. ADHD is also linked to a significant financial strain, parental love and care, and societal healthcare aids (12). Consequently, in those children with ADHD, the quality of life may be challenged. Managing ADHD requires a great amount of time-varying from many months to years.

Limitations of similar management criteria include restricted research in Indian psychiatry, abuse & dependence on anti-epileptic drugs, methylphenidate overdose leading to suicide ideation, and poor prognosis. The chances of

multiple psychiatric illnesses among the paediatric population are a rare phenomenon and increase the probability of errors in diagnosis.

When a child presents with ADHD and epilepsy, it is vital to develop an intervention approach that identifies both the diseases by collaborating with health care experts who are acquainted with epilepsy, behaviour, and thinking.

To alleviate the manifestations, deal with both illnesses, improve general mental & emotional well-being, and maintain social interactions, subjective interventions should be considered for each individual. In many of these therapies, family engagement is crucial as well.

CONCLUSION

The case report is of a patient presenting with features suggestive of ADHD with conduct disorder with masked seizure activity. He was initially treated with Atomoxetine and Risperidone and then when suspected by the psychiatrist, antiepileptics were started. The aim of the report is to point out the probability of misdiagnosis of epilepsy as ADHD.

Attention-deficit/hyperactivity disorder and seizures can present as comorbid conditions. The two disorders may occur together owing to the causal relationship between them or because of the underlying vulnerability in both the disorders.

ADHD symptoms can make diagnosing epilepsy more difficult .Seizures must be treated first if a person is experiencing them. Some of the symptoms associated with ADHD may improve if seizures are controlled.

The Indian medical fraternity should be cautious while diagnosing patients who present with hyperactivity. Symptoms must be properly filtered through thorough history taking and diagnostic screening - both behavioural and medical

screening tests because the same can present with each other and lead to misdiagnosis.

LIST OF ABBREVIATIONS

ADHD – Attention deficit hyperactivity disorder

EEG – Electroencephalography

GTCS – Generalized Tonic-Clonic Seizure

IQ – Intelligence Quotient

OPD – Out Patient Department

DECLARATIONS –

ETHICS APPROVAL & CONSENT TO PARTICIPATE

Not applicable.

CONSENT FOR PUBLICATION

Informed consent for publication was obtained from grandmother, the primary caretaker of the child.

AVAILABILITYT OF DATA & MATERIALS

Not applicable.

COMPETING INTERSTS

The authors, A.S., F.M., J.J., V.D., A.N. and S.S. declare that they have no competing interests.

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AUTHORS' CONTRIBUTIONS

A.S. and F.M drafted the initial manuscript, designed the study, researched the data, contributed to the discussion, wrote the manuscript and reviewed and edited the manuscript. A.N. is the guarantor of this work and is credited to the data integrity and accuracy of the data analysis. J.J. and V.D. screened several related articles, researched data and reviewed and edited the manuscript. All authors contributed significantly to the revision of the manuscript and read and approved the final manuscript.

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