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Diagnosis and Management of Autism Spectrum Disorder

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ABSTRACT

Autism Spectrum Disorder is a neurodevelopment disorder that deals with the antisocial behavior of the patient, verbal or nonverbal communication in first three year of birth, with lack of emotional understanding of patient as well as other and also do not point toward thing patient wants. Person suffering from ASD also suffer with seizures and half epileptic seizures as well. The patient also has Restricted, repetitive behavior, interests, or activities. The study for ASD describes that there are three type of ASD

- Rett syndrome
- Asperger's Syndrome.
- Pervasive Development Disorder.

The etiology explains that ASD is not single disorder it comes with multiple functional disorder. Single gene mutation also responsible for development disorder as well . Development disorder due to single gene mutation the X chromosome become very fragile and leads to various number of brain and development disorders.

In diagnosis which doctor depend upon the behaviors of the patient, the patient does not make any eye contact and some associated behavior also include repetitive behavior, hand flapping. The major due to ASD is epileptic attack because of loss of white matter in brain.

Keywords : ASD, AMYDGALA, Applied Behavior Analysis, Autism Spectrum Disorder

I. INTRODUCTION

Autism Spectrum Disorder is neurodevelopment disorder that deals with the lack of development of patient physically and neurologically as well. There is lack of social interest in patient that means that the behavior of patient with ASD is very antisocial [1]. They also lack eye contact with verbal or nonverbal communication. Major symptom for ASD patients is that they suffer from half epileptic seizures[2]. ASD could be a after effect of number of genetic disorders. The disorder in neonates could lead to physical as well as mental retardation also[3]. The patients are dealt with number of therapies like physiotherapy due to their physical retardation as well as with ABA (Applied Behavior Analysis)[4]. In neonates the first 3 years the patient communicates in verbal or nonverbal form. There are patients who suffer from epileptic seizures and suffers from insomnia too.

There are three type of ASD:

- **Rett syndrome:** Rett Syndrome is also a development disorder in female that leads to ASD in the patient. It appears from age of 6 to 18 year.

There is difficulty in walking and slower growth with small head and impairment in language.

- **Asperge's Syndrome:** Asperge's syndrome is a neurodevelopment disorder in which patient do not show interest in social interaction and the communication is nonverbal with similar pattern of behavior
- **Pervasive development disorder:** Pervasive development disorder that is identified by patient having bunch of disorders that leads to difficulty in social development and communication.[5]

It is observed that the males are affected more by percentage of 2%-3% in comparison with females. It has also been observed that in every patient with ASD do not show the similar symptoms and similar pattern of behaviors. The diagnosis of ASD at first three years is almost very difficult. In ASD the most affected part of brain is Frontal and temporal lobes. AMYDGALA present in medial anterial temporal lobe. In Patients with ASD there is small neuronal and increased cell density in cortical medial, central nuclei of AMYDGALA. [6]

The treatment in first 3 years, patients are treated with physiotherapy for infants who are physical retarded. With growing year, the patients are also treated with therapy named ASA (Applied Behavior Analysis). For aggressive behavior of patients observed patients are also prescribed with antipsychotics, anticonvulsants. [7]

II. SIGNS AND SYMPTOM

- As every patient shows different type of symptoms. But there are some similar symptoms that every autistic patient deal with. In child with ASD it is observed that there is repetitive motor movement with highly fixated interest. An abnormal intensity of behavior and focus, are also in child with ASD. Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypes, lining up toys or flipping objects, echolalia, idiosyncratic phrases).[8]
- Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take same route or eat same food every day).
- Highly restricted, fixated interests that are abnormal in intensity or focus (e.g., strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interests).
- Hyper- or hypo reactivity to sensory input or unusual interest in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).[9]

These symptoms result from underlying challenges in a child's ability to take in the world through his senses, and to use his body and thoughts to respond to it.

Case description:

The boy born in Ludhiana in 2010 was diagnosed with Pneumonia at birth and was under observation for 25 days. Later the boy was observed with poor development as he was not able to walk after 3 years, did not recognize his parents and was having antisocial behavior. The development disorder was observed by the parents and mentioned to the doctor. In diagnosis, the doctors ordered MRI of brain. The MRI clearly stated the lack of white matter in the brain , that had leaded to the balancing and coordination problem in his body. Prenatal hypoxic ischemic insult may be considered for the reason of loss of white matter in brain. Physiotherapy was the

first treatment prescribed for him. The treatment ran for three years until he started walking. The boy is also suffering from insomnia. The sedated sleep record indicated the abnormal sleep pattern. He is also having hearing problem in the right ear. Moderate to severe neural dysfunction on right side was observed in brain stem evoked auditory response (BERA). Patient also suffered from tonic clonic seizures since age of 6 months. For treatment of seizures, he was prescribed drugs that are carbamazepine, valproic acid and olanzapine. Due to the adverse effects of the antiepileptic drugs, he was also prescribed methyl cobalamin, vitamin D tablets and folic acid syrup. The boy in todays date is 10 years old and do not speak but do normal gestures. The doctor has prescribed him for vocal therapy and Applied Behavioral therapy.

Autism and related condition:

Children with difficulties or differences in relating and communicating may fall within a broad spectrum of diagnoses or challenges that includes language processing disorders, attention disorders, sensory or regulatory disorders, and Autism Spectrum Disorder. These challenges often involve a number of different underlying difficulties, including:

Taking in sensations or information: the child may be under or over reactive to the information received through his senses of vision, hearing, touch, smell, taste and body awareness.
Processing information: the child may have difficulty understanding or organizing the sensory information he receives.
Planning or executing responses: the child may have trouble using his body or his thoughts to respond to the information he has taken in.
A child may develop unusual or concerning behaviors in response to these difficulties or differences. For example, a child may be so under-reactive to sensation that he spins in circles in an attempt to increase his sensory input; another child, overwhelmed by the confusing information he's receiving about his world may withdraw, finding security in lining up his cars over and over again. Examples of behaviors parents may observe, by area of difficulty, are:

Relating and emotion

- a tendency to avoid interaction
- difficulty paying attention
- limited eye contact with others
- repetitive statements, play, or behaviors
- failure to develop pretend play
- intense fears about ordinary objects, activities or events
- Language/communication
- problems following simple directions
- echolalia, or repeating what has just been said
- difficulty making needs and desires known by gestures, words or play
- Regulatory and sensory-motor
- difficulty dealing with changes in environment
- avoidance of hugs or light touch
- does not point to show you things
- poor coordination
- "self-stimulatory" behaviors: spinning, hand flapping, head banging.

A child receives a diagnosis based on observation of the behaviors outlined above. However, though a child may share a common diagnosis with other children, each has a unique pattern of development and functioning. Each child is unique in his processing of sensory and other information, and his motor planning (the ability to plan and carry out actions). Some children are over reactive to sensations, such as touch and sound, while others are under reactive. Some children have relatively strong auditory memories, and can memorize entire scripts; others have relatively strong visual memories. Some children are able to plan and carry out a number of

actions in a row, such as going upstairs, getting a toy and bringing it back down, while others are only able to carry out one action at a time, becoming very fragmented in their behavior.

In addition to differences in sensory processing and motor planning, children differ in their basic mastery of the foundations for relating, communicating, and thinking. Some children with ASD can form relationships and engage in two-way communication, while others appear to be very self-absorbed and aimless . Some children can focus and attend and engage with others, but can only participate in a back-and-forth flow of communication in a limited way finding it difficult to use language meaningfully or connect ideas together for logical and reflective thinking. Other children show some mastery of the basics, and the ability to engage in more complex communication as well as the ability to create ideas and use them logically, but are very limited in their capacity to apply these abilities to a broad range of situations . Therefore, while some children may exhibit common symptoms that lead to a diagnosis of an autistic spectrum disorder, their individual patterns – and therefore their paths toward recovery - are quite varied.

III.DISCUSSION

Children with difficulties or differences in relating and communicating may fall within a broad spectrum of diagnoses or challenges that includes language processing disorders, attention disorders, sensory or regulatory disorders, and Autism Spectrum Disorder. These challenges often involve a number of different underlying difficulties, including taking in sensations or information, processing information and planning or executing responses. [10] A child may develop unusual or concerning behaviors in response to these difficulties or differences. For example, a child may be so under-reactive to sensation that he spins in circles in an attempt to increase his sensory input; another child, overwhelmed by the confusing information he's receiving about his world may withdraw, finding security in lining up his cars over and over again. Examples of behaviors parents may observe, by area of difficulty, are: a tendency to avoid interaction; difficulty paying attention; limited eye contact with others; repetitive statements or behaviors; intense fears about ordinary objects, activities or events; problems following simple directions; echolalia, or repeating what has just been said; difficulty making needs and desires known by gestures, words or play; difficulty dealing with changes in environment; avoidance of hugs or light touch; does not point to show you things; poor coordination; self-stimulatory behaviors: spinning, hand flapping, head banging [11] A child receives a diagnosis based on observation of the behaviors outlined above. However, though a child may share a common diagnosis with other children, each has a unique pattern of development and functioning. Each child is unique in his processing of sensory and other information, and his motor planning (the ability to plan and carry out actions) [11]. Autism children are over reactive to sensations, such as touch and sound, while others are under reactive. Some children have relatively strong auditory memories, and can memorize entire scripts; others have relatively strong visual memories. Some children are able to plan and carry out a number of actions in a row, such as going upstairs, getting a toy and bringing it back down, while others are only able to carry out one action at a time, becoming very fragmented in their behavior.[12] In addition to differences in sensory processing and motor planning, children differ in their basic mastery of the foundations for relating, communicating, and thinking. Some children with ASD can form relationships and engage in two-way communication, while others appear to be very selfabsorbed and aimless [13]. Some children can focus and attend and engage with others, but can only participate in a back-and-forth flow of communication in a limited way finding it difficult to use language meaningfully

or connect ideas together for logical and reflective thinking. Other children show some mastery of the basics, and the ability to engage in more complex communication as well as the ability to create ideas and use them logically, but are very limited in their capacity to apply these abilities to a broad range of situations [13]. Therefore, while some children may exhibit common symptoms that lead to a diagnosis of an autistic spectrum disorder, their individual patterns and therefore their paths toward recovery are quite varied.[14] The prevalence of epilepsy in patients suffering from ASD is 5–46% as compared to individuals without ASD (0.5–1%). Presence of epilepsy along with ASD further worsen the quality of life of patients. As taking history in people with ASD along with epilepsy is not easy, therefore diagnosis of epilepsy can be difficult, especially if intellectual disability is also present. [14] In the present case the child is also suffering from tonic-clonic seizures since age of 6 months. Antiepileptic drugs carbamazepine, valproic acid and olanzapine were prescribed to the child for treatment of seizures. Antiepileptic drugs can reduce the absorption of vitamin D, calcium and folic acid.[15] Therefore to combat the adverse effects of the antiepileptic drugs, the child was also prescribed methylcobalamin, vitamin D tablets and folic acid syrup. The boy is also having sleep disorder which was confirmed from the sedated sleep record that indicates the abnormal sleep pattern. He is also having hearing problem in the right ear. Moderate to severe neural dysfunction on right side was observed in brain stem evoked auditory response (BERA). Brain stem evoked auditory response in young children is used to determine the processing of hearing information by brain. The boy was having problem in balancing and coordination as the boy was not able to walk till age of 3 years. At age of 3 years, MRI of the brain has revealed cerebral atrophic changes with pancity of bilateral cerebral white matter which is the reason for problem in balancing and coordination. Prenatal hypoxic ischemic insult may be considered for the cause of loss of white matter in brain. Radiodiagnosis has also revealed the loss of white matter and mild ventriculomegaly (enlargement of ventricle of brain). Physiotherapy was initiated to resolve the problem of balancing and coordination. As a result, the boy was able to walk at age of 6 years. Moderate PAH (pulmonary arterial hypertension) and moderate tricuspid regurgitation was observed in echocardiography examination [16]. At present the boy is 10 years old and do not speak but do normal gestures. He is currently undergoing vocal therapy and Applied Behavioral therapy as suggested by doctor

IV. CONCLUSION

In the present case report, case of a child was presented who is suffering from ASD along with tonic-clonic seizures, insomnia, hearing problem and problem in balancing and coordination. The balancing and coordination problem was resolved with physiotherapy. Antiepileptic drugs were prescribed for treatment of epilepsy and insomnia. The child is undergoing vocal therapy and Applied Behavioral therapy for language and behavior problems.

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