

Autism Spectrum Disorders in Different Blood Groups

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Abstract

Autism spectrum disorder (ASD) is a growing - up disorder which may leads to important and of benefit problems in contact with community and abnormal behaviors. Morphologically there was no definitive differences in comparison with other people, but, they are different regarding to reactions, behaviors and communication skills. The learning, thinking, and problem-solving abilities of people with ASD can range from gifted to severely challenged. Some people with ASD need a lot of help in their daily lives; others need less.

ASD is a collection of many items and not a separated one and include the following conditions: autistic disorder, pervasive developmental disorder not otherwise specified (PDD-NOS), and Asperger syndrome. Collectively all previous conditions known as autism spectrum disorder.

It is not easy to diagnose autism spectrum disorders because of diagnosis depends mainly on family explanation of child behaviors and milestone of growth and developments and also on clinical assessments of children not on certain blood tests or other investigations.

Diagnosis of such disorder may be achieved before age of 2 years by highly expert doctors which is very important for early dealing with ASD and trying to improve certain behaviors, but; in other children the definitive diagnosis not accomplished at early age and delayed to older age leading to get help at late stage.

This review aim to search the frequency blood groups of people diagnosed with autism spectrum disorders and also parental blood groups stored on an electronic database of people formally diagnosed with ASD and involved with previous studies in China, British and India.

Keywords: Autism; Spectrum; Communication; Disability

Introduction

Severity of autism and range of autistic feature are very important points in using the term "spectrum" in addition to disorders of brain and behavioral developmental defects most ASD conditions complaining of difficulties in community communication, limited certain skills and frequent repetitive actions and behaviors. regarding communications autistic child cannot initiate conversation, not respond to those

who try to contact them appropriately and also they do not have eye to eye contact and other nonverbal ways of communications. In addition to that person with ASD resist any changes in environment and usually dependent on routine activities and might focus on unusual items. This variation in signs and symptoms of autism including in this spectrum my help doctors to classify autistic conditions to mild, moderate and severe according to the communications skills. Although certain and limited cause of ASD still not fully understood, but there are many risk factors including:

1. Genetic factors
2. Environmental causes
3. Pre and post-natal conditions
4. Neural and structural defects.

There is evidence that give a hint and suggesting about the role of genetic factors in development of ASD [3].

The ABO system is under control of ABO gene encoding a glycosyltransferase, an enzyme that play a major role regarding presence of carbohydrate as a building component of the red blood cell antigens. A 353 amino acid enzyme present in the gen which is responsible for binding between surface antigen and sugar and formation of H-antigen on the surface of red blood cells and other body cells. In this gen there are 7 exons and cods and sharing a series of one nucleotide polymorphism in different alleles of the ABO gene, referred to as the A, B, and O alleles [4]. The A and B alleles include SNPs that cause functional enzymatic changes. functional non-specific enzymatic changes produced by O allele consists of SNPs in which no H-antigen is presented and therefore unable to add any blood group defining sugar and is located on chromosome 9q34 [5]. As the ABO system gene is localized on the chromosome number 9, of which structural difference is also found in some individuals with ASD, it seemed reasonable to surmise that ABO blood type was functionally related to ASDs.

Signs and symptoms of ASDs

People with ASD often have problems with social, emotional, and communication skills. They might repeat certain behaviors and might not want change in their daily activities. Many people with ASD also have different ways of learning, paying attention, or reacting to things. Signs of ASD begin during early childhood and typically last throughout a person's life.

Children or adults with ASD might:

1. The child does not respond when his name is called or seems to not hear you at times.
2. Refuses to be hugged and held, and appears to prefer playing alone; Someone withdraws into his own world.
3. Poor eye contact, absence of facial expressions.
4. Lack of speech or delay in speaking, or the child may lose his previous ability to say words and sentences.
5. Inability to initiate or continue a conversation or may initiate the conversation to disclose requests or just name things.
6. Speaks with an abnormal tone or rhythm; He may use a monotonous voice or speak like a robot.
7. Repeats literal words or phrases, but does not understand how to use them. Doesn't seem to understand simple questions or directions.

8. Does not express emotions or feelings, and appears unaware of the feelings of others.
9. Does not point out or bring things to share his interests.
10. Interacts inappropriately socially by being idling, hostile, or disruptive.
11. Has difficulty recognizing nonverbal cues, such as interpreting people's other facial expressions, body position, or tone of voice.
12. The child makes repetitive movements, such as rocking, spinning or flapping hands.
13. May perform activities that could harm them, such as biting or hitting the head.
14. Establishes certain procedures or rituals, and gets upset when they change [6,7].

Causes and risk factors

There is no single known cause of autism spectrum disorder. Given the complexity of this disorder, and its varying symptoms and severity, there are likely to be many causes for it. Genetics and environment may play a role [8,9].

Genetic factors

Several different genes appear to be involved in the genesis of autism spectrum disorder. In some children, autism spectrum disorder may be linked to a genetic disorder such as Rett syndrome or fragile X syndrome. Genetic changes (mutations) may increase the risk of developing autism spectrum disorder in other children. But at the same time, other genes may influence the development of the brain, the way brain cells communicate, or may determine the severity of symptoms. Some genetic mutations may appear to be inherited, while mutations occur spontaneously [10-12].

Diagnosis

Autism is diagnosed through the doctor doing non-laboratory tests for the child's growth and mental development, and through the specialist doctor having a conversation with the parents to learn about the child's social and behavioral skills in addition to language abilities and the extent to which these factors have changed and developed, at the present time the specialist doctor can In cooperation with the parents, the disease is diagnosed at an early stage by the end of the first year of the affected child's life [13].

Diagnosis in young children

Diagnosis in young children is often a two-stage process.

Stage 1: General developmental screening during well-child checkups

All children need an assessment of their development and growth by a pediatrician or someone who performs this duty in health institutions. The American Academy of Pediatrics recommends that all children undergo a periodic assessment that assesses their growth and development stages and diagnoses any delay in them. This assessment is carried out at different age stages and during the 9 months and 18, 24 and 30 through periodic visits to health institutions. As for autism, it is in the 18th and 24th months of age. As for children who have risk factors for autism, they need additional evaluation, as well as those who have some behaviors of the autism spectrum, or if one of their parents has autism, if they have a family history of the disease or those children who are born with low weight. The doctor asks the parents some questions related to the child's behavior and compares them with his observations of the child's behavior.

Stage 2: Additional evaluation

The second evaluation is by a medical team and official health professionals who have experiences in diagnosing the autism spectrum, and the team includes:

1. A developmental pediatrician with experience and training in child development.
2. A child psychologist who has sufficient experience and who has received training in the field of brain development and children's behavior.
3. A neurologist who has sufficient experience to focus on the evaluation, diagnosis and treatment of other neurological, medical and developmental conditions.
4. Specialist in speech and its diseases and language diseases and who have sufficient experience and training in the field of communication problems and difficulties and have an important role in evaluating the child's thinking levels and his ability to communicate, his language abilities and skills according to age groups such as his abilities and daily activities that include eating alone, using toilet and changing clothes.

Because the autism spectrum is a thorny and complex subject, and children with autism may suffer from other health problems, children with autism need a comprehensive evaluation that includes:

1. Hematological tests
2. Hearing tests.

Depending on the results of this assessment, medical conditions can be diagnosed and treatment recommended.

Diagnosis in older children and adolescents

In some cases, children do not show symptoms of autism when they are young, and they do not seem to suffer from autism risk during a later stage of their lives. Parents and school teachers should give great importance to the symptoms that children suffer from in school age and adolescence, for example, children and adolescents with autism show strange reactions to different stimuli, such as light, sounds, smells, touch and taste, but in other things they feel great discomfort towards some light sounds, such as The sound of leaves or birds, they are affected when there is a sudden change in the sensory stimuli around them, such as bright lights, loud sounds and touching things that are rough to the touch. They don't show any interest in the words of the people they are talking to directly.

Adolescents with autism are unable to express their feelings in a way that is socially acceptable to others, and they start screaming, crying or laughing without any clear justification for it, if they are concerned about a particular matter [14,15].

Diagnosis in adults

Diagnosing ASD in adults is often more difficult than diagnosing ASD in children. In adults, some ASD symptoms can overlap with symptoms of other mental-health disorders, such as anxiety or attention-deficit/hyperactivity disorder (ADHD).

Adults who notice the signs and symptoms of ASD should talk with a doctor and ask for a referral for an ASD evaluation. While testing for ASD in adults is still being refined, adults can be referred to a neuropsychologist, psychologist, or psychiatrist who has experience with ASD. The expert will ask about concerns, such as:

1. Social interaction and communication challenges
2. Sensory issues
3. Repetitive behaviors
4. Restricted interests.

Reaching the correct diagnosis enables us to understand the previous difficulties and their severity and to determine the appropriate method to help deal with them or reduce them. Studies now focus on identifying appropriate ways to provide services and provide the necessary support to improve people's lives and facilitate their communication and interaction with society.

Discussion

It is possible to assume that the type of blood type can be considered a risk factor for developing autism spectrum, based on biological reasons that increase our belief that blood groups have a role in the incidence of autism spectrum. There are three previous studies in which there were indications of the role of blood groups in the development of the autism spectrum. These published epidemiological studies examined the relationship between them. The first was conducted in the Shanghai Center for Mental Health, where a survey was conducted for families with children with autism spectrum. This study showed that there is a relationship between certain blood groups and autism due to genetic causes and unknown genetic mechanisms that affect the process of neurological development. As for the second study, it was a cross-sectional study that was carried out at the University of Sunderland in Great Britain, and the relationship between the mother's blood group and the child's blood group was surveyed.

The third study was a descriptive study carried out by the Department of Community Medicine at Trivandrum Medical College in India. This study surveyed the gender of people, their blood groups and their places of residence. As in previous studies, it was concerned with finding a relationship between blood groups and the incidence of autism spectrum.

In the first study the percentage of A, B, AB and O in the control population (1695 person) were 29.9%, 28.6%, 11.0%, 30.5%, respectively. In mothers of ASDs child the percentage of A, B, AB, and O were 26.7% (60), 28.4% (64), 9.3% (21) and 35.6% (80) respectively, while in fathers were 28.8% (61), 25.9% (55), 8% (17) and 37.3% (79). So there no significant difference was discovered between the distribution of ABO blood type in parents of children with ASD and that in the control population; So, this resemble a study in Iran that found the most frequent blood type in both parents was O and no significant relationship between parents blood groups and having ASD child [16,17].

In the second study the percentage of A, B, AB and O in ASDs child were 28% (7), 4% (1), 4% (1) and 64% (16) respectively, and also O blood group was the most frequent in control population.

In the mothers the percentage of blood groups were 40%, 11%, 3% and 46% respectively, the O blood group was the commonest also in control population.

In regarding to gender the third study found that 60% of cases were male while 40% only were female while in other study in 2017 was male to female ratio 3:1. The O blood group was 36.7% more common than others ABO blood groups in ASDs child.

Conclusions

1. The type of blood group can be considered a risk factor for developing autism spectrum.
2. In parents of ASDs child blood group O is the commonest one.

3. ASD more common in blood group O child.
4. Further article is needed to ascertain the existence of a relationship between blood groups and ASDs.

Recommendations

- To ministry of health-1: Development centers for ASDs patients and increase the awareness about ASD.
- To researchers-2: Do more studies that study a relationship between ASD and ABO blood groups.
- To families-3: Make ASD profile to their ASD child to facilitate further studies about it.

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