Developmental disorders

Autism Autism is a neurodevelopmental disorder with abnormal social, cognitive, emotional and communicative behavior. The presence of the disorder can be detected within the first 3 years of infancy. The condition is generally heterogeneous as the clinical features and behavioral patterns vary from one autistic child to another and the symptoms of certain other disorders such as Rett's and Asperger's disorder often overlap with that of autism.

Key clinical features

The key clinical features that are identified as the child grows include, abnormal social interaction such as impaired non verbal behavior and movements, diminished interest in playing and interaction with peers, lack of spontaneity and emotional reciprocity, delay or total lack in speech, repetitive use of language, behavior patterns or mannerisms and constant preoccupation with certain objects (Lord et al; Brereton and Tonge).

Prevalence

According to latest reports the prevalence of Autism is about 60 per 10, 000. However it is widely believed this rate is constantly on the rise (Hughes).

Cognitive abilities

Recent research has revealed that the cognitive ability of children with autism ranges from severely disabled to normal. They have low IQ scores and have difficulty in verbal sequencing. However, they have good immediate memory and visuo-spatial skills. The language, speech tone and modulation of these children are quite unusual and they sound mechanical and devoid of any emotions. They might use abnormal words, talk out of context or simply repeat them. They also have difficulty in understanding spoken language.

Social abilities

Autistic children also suffer from social impairments such as disinterest in interpersonal relationships, lack of non-verbal communication with people and inability to play with other children. Doctors believe that these may change as the child grows.

Genetics

The genetics of autism has revealed that susceptibility to the disorder may be due to the presence of at least 3 abnormal genes. However, more research should be carried out to determine the genetic and environmental factors, if any, that may cause the disorder. Neurobiology

Neurobiological evidence suggests that the brains of people with autism are underdeveloped with abnormalities observed in the brain-stem structures. Current research also points to the involvement of the cerebral cortex for onset of clinical symptoms (Hughes). The heterogeneity of the disorder has made it difficult to study the neural systems involved and hence a detailed study of the neurobiology of autism would require proper categorization of the people with the disorder in order to find out the various brain regions causing the various impairments (Lord et al).

William’s syndrome is a complex genetic disorder that results in cardiovascular, connective tissue and neurodevelopmental deficits.

Key clinical features

The key clinical features include narrowing of the aorta, increased calcium concentration in the blood, language and motor movements are delayed, sensitivity to certain types of sound and along with these abnormal facial features and low IQ are also present in people with this disorder.

Prevalence

The occurrence of William’s syndrome is estimated to be 1 in 20, 000 live births.

Cognitive abilities

The general cognitive functioning is lower in these people who tend to be highly social and are also anxious people with an increased interest in music. Though they have a good grasp of language skills, despite the slow beginning, their knowledge and understanding of the outer world is generally very low. They are, however, very strong grammatically and have sound linguistic skills which they tend to exhibit publicly. The spatial cognition of these people have been found to be very poor as they often lack organizing ability and have difficulty in arranging things in the right order. Visual skills like face recognition and processing are quite good.

Social abilities

People with William’s disorder have better social skills and have a strong urge to interact socially, which is especially evident among adolescents and adults. This increased interest in socializing helps to improve their language and expression and hence these people are highly expressive.

Genetics

The genetic cause for the occurrence of the disorder has been identified to be a micro deletion in the gene encoding the protein elastin and 20 other genes present on chromosome 7. In addition duplication of certain genetic regions surrounding the elastin gene has also been found within which most of the deletion breakpoints are located.

Neurobiology

The neurobiological characteristics of individuals with the disorder have been established by measuring event-related potentials in the brain which has

revealed that both the hemispheres of the brain are active with respect to words and faces in these individuals. Thus the neural systems that are involved in these processes are different from that of normal individuals. In addition the brain volume is also reduced in these individuals along with reduced gray matter in the occipital lobe. More detailed research needs to be carried out to determine the neurobiology of the illness (Korenberg).

Conclusion

While both Autism and William's syndrome is associated with neurodevelopmental defects, people with these two disorders exhibit distinct differences with respect to their language and social abilities. Autistic individuals have very poor linguistic ability and show reduced interest in social interaction at least at the initial stages. They are also less expressive and tend to be devoid of any emotions. In contrast, people with William's syndrome have highly developed social skills and they have a spontaneous urge to interact socially. They have good language skills and are also highly expressive during the communication. In addition autistic children do not show any interest in activities such as music and play, while those with William's syndrome show a good interest in music. Thus, with respect to interaction and involvement in activities, those with William's syndrome fair better compared to Autistic individuals.

Reference:

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3. Hughes, Virginia. Mercury Rising. Nature Medicine 13(8) (2007): 896-897.

4. Korenberg, Julie R et al. Williams Syndrome: A Neurogenetic Model of Human Behavior. Encyclopedia of Life Sciences (2005): 1-10