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RISK FACTORS IN AUTISM SPECTRUM DISORDERS: THE ROLE OF GENETIC, EPIGENETIC, IMMUNE AND ENVIRONMENTAL INTERACTIONS

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Abstract

Autism spectrum disorders (ASD) are a heterogeneous group of neurodevelopmental disorders that affect an individual's ability to communicate and socialize, often associated with repetitive movements or behaviors. Frequently patients associate intellectual disability or digestive problems. Autism is more common in males and affects 1 in 88 children in USA. The mechanism that leads to ASD is very complex, involving genetic, epigenetic, immune and environmental factors that could act in different proportions, at different developmental stages (prenatal, perinatal or postnatal) and on different pathways. The general prototype consists in an initial systemic dysfunction, such as immune dysregulation, inflammation, impaired detoxification or oxidative stress in an individual with genetic predisposition. In this context, ASD may arise due to the harmful action of environmental factors that lead to neuroinflammation and abnormal brain development. Environmental factors involved in autism determinism could be very diverse and include classical extrinsic factors (toxicants, environmental pollutants, medications, food additives, electromagnetic fields and even social influences), maternal disorders or lifestyle factors, as well as intrinsic factors (hormones, inflammatory mediators, microbiota and other biological molecules that make up the microenvironment around the developing fetal or neonatal brain).

The aim of the present review is to discuss actual theories concerning genetic, epigenetic, immunologic and environmental factors interplay in ASD determinism, to present a practical and global approach of this complex problem, as well as to point some of the new directions for ASD prevention and therapy.

Key words: autism spectrum disorders, environmental factors, epigenetic, genetic, microbiota

Received: September, 2013; Revised final, May, 2014; Accepted: June, 2014

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