Molecular and Cellular Mechanisms of Synaptopathies in autism

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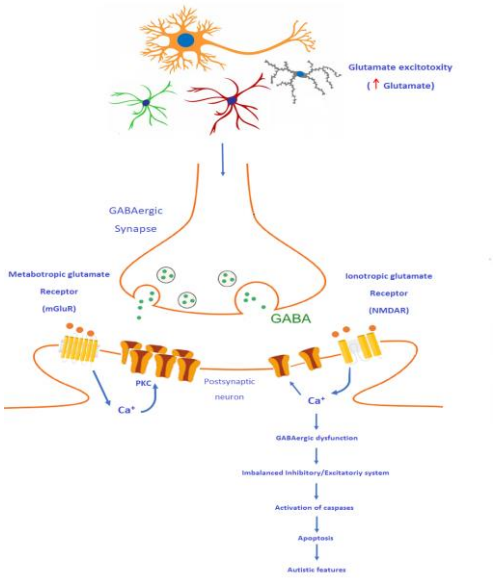
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1. Abstract:

Autism is a complex neurodevelopmental condition that includes impairments in social interaction poor language and communication skills together with repetitive behaviors. Synapses are essential components of neurons that needed for the travel of information throughout the nervous system to adjust different behaviors. Thus, optimal synaptic communication is required for proper brain physiology, and slight deviation of synapse function early in life can lead to neurodevelopmental disorders among which is autism. Synaptopathy arises from alterations that affecting the integrity and/or functionality of synapses, can contribute to synaptic pathologies as etiological mechanism of autism. Based upon the blood biomarkers of autism, increased platelet serotonin (5-HT), suggest that increased 5-HT uptake or storage in the presynaptic neuron would lead to decreased brain 5-HT. A relationship between autistic behavior and dysfunctions in the midbrain dopaminergic system was also hypothesized. While dysfunction of the nigrostriatal circuit leads to stereotyped behaviors, a dysfunction in mesocorticolimbic circuit leads to social deficits. Additionally, imbalanced GABAergic/glutamatergic neurotransmissions in plasma of autistic children demonstrates glutamate excitotoxicity as etiological mechanism of this disorder. Our most recent study proved that GABA synaptopathy promotes caspase 3 and caspase 9 as pro-apoptotic markers. In this talk, relationship between synaptopathies, apoptosis, mitochondrial dysfunction, and impaired gut microbiota as etiological mechanisms of autism will be discussed. Understanding common causes and mechanisms of autism-associated synaptic dysfunction could offer novel clues toward synapse-based treatment strategy and early intervention of autism.



References:

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Biography:

Afaf El-Ansary, female, biochemist, graduated from biochemistry department, Ain Shams University, Egypt in 1974. She worked in the National Research Centre, Egypt from 1976-2000, Since 2016- till now, she joined the Central laboratory as senior scientist to supervise the Biochemistry, Proteomic and biomarkers units. She is member in number of national and international societies and she is recorded as reviewer in many international journals. She is member in the European Society of Predictive, Preventive and Personalized Medicine Society (Moscow).

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