EARLY DEATH

AND ACCELERATED AGING IN SCHIZOPHRENIA

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Abstract
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Schizophrenia and NMDA

It's known that NMDA (N-methyl-D-Aspartate) receptor, the co-agonist that regulates activation of glutamatergic excitatory synapses, can influence different functions, such as brain development, synaptic transmission, plasticity and behavior. New studies show that D-Asp is able to directly modulate NMDA-mediated transmission and functions in rodents; as observed in the brain of schizophrenic patients.

The findings described in this review highlight that increased endogenous levels of NMDAR impacts a series of functional and structural phenotypes relevant to schizophrenia. Although knowledge about the neurobiological role of D-Asp and its potential involvement have been emphasized in recent years, it's still unclear which specific enzymes and transport systems are responsible. Indeed the results of unregulated D-Asp metabolism in postmortem brain samples obtained so far are encouraging, however there's only a limited number of samples analyzed by only one research team.

Another important goal would be the evaluation of the therapeutic value of D-Asp in the treatment of schizophrenia and its potential role on embryonic metabolism. Thereon, the etiology involve genetic and environmental risk factors during neurodevelopmental stages, related with the D-Asp peak.

Telomere Theory

Premature onset of aging-related medical conditions may be the real reason why patients with schizophrenia have less 25-30 years of life expectancy, not only by unhealthy lifestyle (sedentarism, smoking) and metabolic effects from antipsychotics. One of the most consistent observations pointing to accelerated aging in this population is telomere shortening. They're the terminal part of chromosomes (plastic shoelace aglets), which are known to shorten after each cell division.

They can be measured in lymphocytes, which researchers consider to be "windows to the brain".

Mitochondrial Theory

The mitochondrial DNA is not protected by histones as observed in nuclear DNA, and may be the primary target for ROS (Reactive Oxygen Species), and therefore oxidative damage. It's possible that the high oxidative stress in schizophrenia (accelerated aging) may contribute to mitochondrial dysfunction, which leads to further erosion of telomeres.