



Direct evidence of viral infection and mitochondrial alterations in the brain of foetuses at high risk for schizophrenia

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Abstract:

Schizophrenia with 1% of prevalence constitutes one of the fundamental problems of public health in the world for its human, social and economic repercussion independently of the temporary or geographical context where it appears. The neurodevelopmental hypothesis in the aetiology and physiopathology of schizophrenia is considered one of the most consistent at present. It is based on a series of evidences that guide toward an affection in the critical period of the human being development due to pregnancy and delivery complications, particularly those with known or presumed impact on foetal neurological development, that result in increased risk for schizophrenia psychosis. Among the possible etiological candidates are viral infections. The minor physical and functional anomalies, manifesting as soft neurological signs, slight anatomical defects of the head, hair, eyes, mouth, hands and feet, as dermatoglyphic asymmetries, are due to some injury occurring during the first and more probable second trimester of foetal life, and are more common among patients with schizophrenia and in their unaffected siblings than in the general population. A virus acting in this important and critical stage of the development interacting or not with genetic factors can be responsible for the cascade of biological events that appear later on and could explain the period of relative stillness that exists between the birth and the appearance of the symptoms in the puberty that could be related to the reactivation of a latent viral infection. In the present work additional results are presented in an ultrastructural study carried out in samples of the left temporal lobe of foetuses aborted for medical reasons from schizophrenic mothers with strong familial antecedents of schizophrenia. The findings obtained are compatible with an active infection of the central nervous system by herpes simplex



hominis type I [HSV1] virus during the second trimester of pregnancy. Until our report evidences supporting the concept of virus-cell interaction in the neurodevelopmental hypothesis of schizophrenia had been indirect. Virus particles had never been demonstrated. The present results are the first direct evidence that demonstrate the presence of virus particles in the central nervous system of foetuses in the critical period of the second trimester of foetal development. The importance of this finding can have practical applications in the prevention of the illness keeping in mind its direct relation to the aetiology and physiopathology of schizophrenia. Among the measures of preventive character in pregnant women at risk of having a descendant of schizophrenia are the study of the amniotic fluid cells by electron microscopic techniques, and in consequence in case of being positive of viral infection, the recommendation of an early antiviral treatment or the voluntary interruption of pregnancy among other measures.

Biography:

Segundo Mesa Castillo is working at Psychiatric Hospital of Havana, Cuba.

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