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Angiogenesis in the Pathophysiology of Schizophrenia – a Comprehensive Review and a Conceptual Hypothesis

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Introduction: Schizophrenia (SZ) is a severe mental disorder poorly elucidated from the etiopathogenesis prism. Recently, several micro and macro vascular abnormalities have been consistently implicated in SZ's pathophysiology. The relationship between Angiogenesis and SZ can putatively influence brain hemodynamics, pathophysiology and symptomatology due to its involvement in embryogenesis and neurogenesis. Angiogenesis can provide a framework in which some etiological factors and susceptibility genes for SZ can be linked together.

Aims: To explore the link between SZ and angiogenesis, taking into account new insights from genetic, molecular, neurochemical, animal, and neuroimaging functional studies.

Methods: A non-systematic review of the literature was performed to summarize current knowledge regarding Angiogenesis and SZ using the PubMed database.

Results: Recent molecular and neuroimaging studies indicate that angiogenesis could be involved in SZ etiopathogenesis through its role in neurogenesis during neurodevelopment, or by angiomodulation of cerebral blood flow (CBF). A complex multivariate interplay between angiogenic factors, dopamine, neurotrophins, brain angiogenic inhibitors molecules (BAI1-3) and patterns of regional blood flow may yield to a biological effect.

Conclusions: The role of Angiogenesis in angiomodulation and angioregulation of regional CBF patterns may have direct implications in the clinical heterogeneity of SZ. Studying the effect of antipsychotics on brain microvasculature and on CBF in different stages of the disease, focusing on brain Angiogenesis activation through VEGF or by neurotrophic-based mechanisms, and by complementing the analysis determining related Angiogenesis abnormalities, could reveal more cues behind the crosstalk's between Angiogenesis, CNS development and SZ.