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LATERALIZATION OF CEREBRAL HEMODYNAMICS IN SCHIZOPHRENIA DURING THE TRAIL MAKING TEST: A FUNCTIONAL TRANSCRANIAL DOPPLER SONOGRAPHY STUDY

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Introduction:

Schizophrenia is a major mental disorder, with complex symptoms involving psychosis, apathy and cognitive impairment. The Trail Making Test (TMT) is a useful tool to assess cognitive functioning. Functional transcranial Doppler sonography (fTCD) of basal cerebral arteries is a non-invasive technique that allows monitoring of cerebral hemodynamics with a high temporal resolution during cognitive tasks.

Objectives:

We assessed cerebral hemodynamics and lateralization in the middle cerebral arteries (MCA) using fTCD while patients with chronic schizophrenia and healthy subjects performed the TMT Part A and B, as well as a control task.

Methods:

fTCD was used to asses bilateral mean cerebral blood flow velocity (MFV) changes in the middle (MCA) and anterior (ACA) cerebral arteries. Fifteen patients with chronic Schizophrenia and 20 healthy control subjects with similar sociodemographic characteristics performed the TMT during fTCD measurements of the MCA and ACA.

Results:

Schizophrenia patients demonstrated an overall poorer performance, with a significant different lateralization pattern for both forms of TMT than healthy subjects. There was a significant slowing both forms of TMT, schizophrenia was associated with initially left sided lateralization. Healthy subjects showed a bilateral pattern.

Conclusions:

These novel results show performance and brain perfusion abnormalities in schizophrenia, supporting the idea that cognitive performance has a pathological functional correlate predominantly in the lateral hemispheres of the brain. It adds to the notion that fTCD is a valuable tool to correlate psychological paradigms with brain perfusion.

Keywords: schizophrenia, cerebral hemodynamics, cognition

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