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GENDER CHARACTERISTICS OF CEREBRAL HEMODYNAMICS DURING COMPLEX COGNITIVE FUNCTIONING

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Functional Transcranial Doppler sonography (fTCD) has been applied to assess peak mean cerebral blood flow velocity (MFV) with a high temporal resolution during cognitive activation. Yet, little attention has been devoted to gender-related alterations of MFV, including spectral analysis. In healthy subjects, fTCD was used to investigate a series of cerebral hemodynamic parameters in the middle cerebral arteries (MCA) during the Trail Making Tests (TMT), a means of selective attention and complex cognitive functioning. After the initial peak, there was an MFV decline during complex functioning. Further, in females, we observed a dynamic shift in hemispheric dominance during that condition and there was a frequency peak at 0.375 Hz in both MCA. These novel results suggest condition-specific features of cerebral hemodynamics in females, and it adds to the notion that gender is a fundamental confounder of brain physiology. It is intriguing to speculate whether condition-related alterations of spectral frequencies in females represent a marker of increased vulnerability for psychiatric diseases such as depression.