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Early identification of cognitive decline in metabolic syndrome

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Background: Metabolic syndrome (MetS) may be a prodromal manifestation of vascular cognitive impairment. Diagnosing early stages of cerebrovascular pathology can lead to prevention and delay of the progression of pathological conditions such as vascular cognitive impairment.

Objective: The objective of the study was to investigate new biomarkers for early diagnosis of MetS and cognitive decline as a follow-up. A cardiological, neuropsychological and neurological study was conducted among 75 Bulgarian participants. Beta amyloid in the blood, procalcitonin (PCT), NT-proBNP as predictors of cognitive impairment in patients with metabolic syndrome were identified.

Methods: Clinical, anthropometric, biochemical, neuropsychological, cognitive and statistical data processing. Plasma amyloid beta (Aβ) levels, procalcitonin, NT-proBNP in MetS were investigated in participants with MetS and in group of healthy people.

Results: In the present study, plasma levels of Aβ42 and Aβ40 were found to be reduced in MetS participants. Procalcitonin concentration was significantly higher in males than in females. NT-proBNP was significantly higher in females than in males ($p < 0.001$). Regression analysis showed a positive relationship between NT-proBNP and systolic blood pressure ($p < 0.001$) and fasting blood glucose ($p < 0.05$). An inverse relation between NT-proBNP and diastolic blood pressure, waist circumference, triglycerides, HDL- and LDL cholesterol was found.

Conclusions: There was a positive association between PCT levels, decreased levels of Aβ42 and Aβ40, as well as elevated NT-proBNP and cognitive impairment in people with MetC. A concentration of NT-proBNP of 60 pg / ml or greater could be an indicator of metabolic abnormalities and early cognitive decline.

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