

ORIGINAL ARTICLE

CHRONOSCOPIC READING IN WHOLE BODY REACTION TIMES IN DETECTING COGNITIVE DYSFUNCTION IN METABOLIC SYNDROME: A CASE CONTROL STUDY

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ABSTRACT

BACKGROUND: The metabolic syndrome, a clustering of several commonly occurring disorders that include abdominal obesity, hypertriglyceridemia, low high-density lipoprotein level, hypertension, and hyperglycemia, has been specifically investigated as a risk factor for cognitive decline in elderly individuals. The metabolic syndrome may be a risk factor for cognitive decline because it summarizes the joint effects of these risk factors. It is known that difference between simple and choice reaction time (RT) implies time required for cognition. Though delayed choice RTs indicate involvement of cognition, they cannot quantify how much time is required for cognition. In whole body simple reaction time (WBSRT), RT is split into two chronoscopic readings: C1 and C2. C1 measures time required for central processing which requires cognition and C2 measures total RT. C2-C1 measures time required for peripheral motor response. We hypothesized that whole body choice RT chronoscopic reading 1 (WBCRTC1) will be delayed in metabolic syndrome and WBCRTC1 will have predictive value in detecting cognitive dysfunction. **SETTINGS AND DESIGN:** Hospital-based cross-sectional case-control study. **MATERIALS AND METHODS:** Study was conducted on 120 subjects using visual and WBSRT having criteria of age (40-60 years) and metabolic syndrome, compared with equal number of age- and sex-matched controls. Statistical analysis was done by independent t-test and duration of metabolic syndrome was correlated with cognition times (WBCRTC1) using Pearson's correlation. Predictive value of WBCRTC1 was calculated using receiver operating characteristic curve. **RESULTS:** Delayed visual simple RT, visual choice RT, WBSRT, and whole body choice RT (WBCRT) observed among subjects metabolic syndrome when compared with controls. Choice RTs were more delayed compared to simple RTs. WBCRTC1 (608.8 ± 132 ms) was more delayed

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than WBSRTC1 (424.05 ± 89.9 ms) among metabolic syndrome indicating cognitive dysfunction. Unfortunately, there was no significant correlation between duration of metabolic syndrome with cognition. The best cut-off value for WBSRTC1, when predicting cognitive dysfunction in metabolic syndrome was 542.5 ms (sensitivity 36.7% and specificity 31.6%). **CONCLUSIONS:** WBSRTC1 can be used as a tool to detect cognitive dysfunction.

Key words: Cognition, metabolic syndrome, reaction times

