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The relationship between attention and static balance disturbance in patients with Parkinson's disease

Abstract:

Objective Balance disturbance is one of the main complications of the Parkinson's disease (PD). As studies have shown that impairments in some cognitive processes can lead to balance problems, we investigated the relationship between focused and divided attention and static balance in patients with PD and a healthy control group. Methods We included 111 patients with PD (M age = 49.41, SD = 6.33 years) and 142 healthy individuals (M age = 50.62, SD = 6.07 years). All participants were evaluated with the Trails Making Test A and B (TMT), and all participants' balance was evaluated with a Wii Balance Board, from which we measured the antero-posterior (AP), medio-lateral (ML), and total center of pressure (COP) velocity. We compared the two groups in terms of TMT-A, TMT-B, and COP velocity tests in both eyes-open and eyes-closed conditions with independent t-tests, and we calculated Pearson's correlation coefficients between the balance board-derived outcomes and the TMT scores. Results The two groups differed significantly on TMT-A and TMT-B scores, in total and ML COP velocity in both eyes-closed and eyes-open conditions, and in AP COP velocity only in eyes-open condition. Among patients with PD, TMT-A and TMT-B scores were positively correlated with total, ML, and AP COP velocity, in both eyes-open and eyes-closed conditions. Conclusions Associated attention deficits may be among the causes of balance disturbances in patients with PD, though both attention and balance may have a common root in brain circuitry.

Keywords: Static balance . Parkinson'sdisease . Focused attention . Divided attention . Center of pressure

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