POSTURAL CONTROL AND SENSORIMOTOR FUNCTIONS IN OLDER ADULTS WITH DIABETIC PERIPHERAL NEUROPATHY

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Older adults with diabetic peripheral neuropathy (DPN) have a higher incidence of falls compared to type 2 diabetes mellitus (DM) patients without DPN(NDPN). The study aim was to compare postural control and sensorimotor functions of DPN patients with NDPN and healthy DM patients were recruited from diabetic clinics via purposive sampling. DPN was assessed by validated symptom and examination score and vibration perception thresholds (Biothesiometer;VPT). Proprioception was measured by a lower-limb matching task used in Physiological Profile Assessment (PPA). Tactile sensitivity was assessed by Semmes-Weinstein pressure aesthesiometer. Knee extension strength was measured isometrically by a tool in PPA and five-time sit to stand test. Balance abilities were measured by sway measures. The sample comprised 65 participants-(42.4% males and 57.6% females); DPN-(n=29; age=61.3±5. 4 years; DM duration=17.5±6.2 years) and NDPN-(n=25; age=60.7±6.2 years; DM duration=13.4±6. 9 years) and healthy-(n=11; age=55.0±3. 4 years). There was a significant difference between groups for proprioception-($F(2,63)=4.52$,$p=0.015$) and tactile sensitivity-($F(2,61)=14.83$, $p=0.000$). Significantly lower proprioception in DPN-(2.9±1.6, $p=0.02$) compared to healthy(0.6±1.02) was detected. Significantly lower tactile sensitivity in DPN-(4.6±1.1) compared to healthy-(3.1± 0.5, $p=0.000$) and NDPN-(3.7±0.5, $p=0.001$) were detected. The DPN showed, compared to healthy controls, an increased five-time sit to stand time ($p=0.009$), reduced knee extension strength ($p=0.001$) and increased antero-posterior sway ($p=0.03$) on foam with eyes opened condition. The DPN showed, compared to the NDPN, reduced knee extension strength($p=0.006$), increased medio-lateral sway ($p=0.03$) on foam with eyes opened condition. DPN patients have significantly impaired balance, LL proprioception and tactile sensitivity which causes postural imbalances leading to increased risk of falling. Fall risk screening should be performed in DPN using a tool including postural and sensorimotor functions.

Keywords: Postural Control, Sensorimotor Functions, Diabetic Neuropathy