ABSTRACT
PATTERNS OF CHANGES IN SERUM LEVELS OF NERVE GROWTH FACTOR, BRAIN-DERIVED NEUROTROPHIC FACTOR, AND NEUROTROPHIN-3 TOWARD THE REPAIR OF DIABETIC NEUROPATHY, AFTER PERFORMING DIABETIC FOOT EXERCISE

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Objective: to determine the pattern of changes in serum levels of NGF, BDNF, and NT-3 in the improvement of diabetic neuropathy, after doing diabetic foot exercise.

Method: a true experimental study with randomized pre test – post test control group design. A total of 36 subjects meeting the inclusion and exclusion criteria were included in the exercise group or the control one with age matched systematic random sampling method. The exercise group has 3 subjects dropped out, and the control group has 1 subject dropped out.

Result: Exercise group shows significant improvement on the score of ABI ($p=0.002$), systolic blood pressure ($p=0.014$), diastolic blood pressure ($p=0.055$), DNS ($p=0.01$), DNE ($p=0.001$). Increase of serum level of NGF ($p=0.157$), decrease of serum level of BDNF ($p=0.059$), and increase of serum level of NT-3 ($p=0.049$). Control group has a result respectively on ABI ($p=0.131$), systolic blood pressure ($p=0.668$), diastolic blood pressure ($p=0.216$), DNS ($p=1.00$), DNE ($p=0.543$), increase of NGF ($p=0.402$), decrease of BDNF ($p=0.803$), and increase of NT-3 ($p=0.264$). The comparation results of the two groups have significant different on the score of ABI ($p=0.01$), systolic blood pressure ($p=0.01$), diastolic blood pressure ($p=0.01$), DNS ($p=0.01$), DNE ($p=0.01$), increase of NGF ($p=0.04$), decrease of BDNF ($p=0.01$), and increase of NT-3 ($p=0.01$).

Conclusion: Diabetic foot exercise has a peripheral affect on a clinically significant improvement based on ABI scores, systolic and diastolic blood pressure, DNS and DNE. A significant increase in serum levels of NGF, a significant decrease in BDNF serum levels is as reductive compensation from the influence of peripheral foot exercise work. The most affected Neurotrophin level is NT-3 which is more increased being compared to NGF and BDNF.

Key words: nerve growth factor, brain-derived neurotrophic factor, neurotrophin-3, foot, exercise, serum, human, neuropathy, diabetes.