Extended Abstract
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European Stroke 2020: Aerobic exercises enhance cognitive functions and brain derived neurotrophic factor after ischemic stroke.

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Background: Brain derived neurotrophic factors (BDNF) have a role in increasing the brain's resistance to damage and degeneration with aging and enhances long term memory and learning.The current study aims to demonstrate the role of aerobic exercises enhancing cognitive functions and its effect on (BDNF) in post-ischemic stroke patients in the territory of anterior circulation.

Methods: Thirty stroke patientswith different degrees of cognitive impairment measured by Adenbrookes's Cognitive Examination- Revised (ACER) were divided into two equal groups of fifteen patients each; group 1 (G1) (considered as the control group) were treated by a designed standard physiotherapy program. This program was applied for 25-30 minute per session, three times per week, day after day for successive eight weeks. Group 2 (G2) were treated by the same designed physiotherapy program for "25-30" min. followed by a rest period for about 10-15 min, then aerobic exercise was done on a bicycle for 40 to 45 min,three times per week for eight weeks. After eight weeks patients in both groups were subjected to reassessment of cognitive functions using ACER. Levels of (BDNF) in venous blood sample were assessed before and after the eight weeks of physiotherapy.

Results: Comparison of the (ACER) total score post-treatment in (G1) and (G2) showed a statistically significant difference with increased values in the (G2) ; 75.93+/-4.9 and 81.07+/-6.16 respectively (p= 0.017). Pre- and post- treatment serum level of BDNF did not show a significant difference in (G1) (P=0.698) but in (G2) there was a high statistical difference (P=0.0001).Pearson rank correlation (r) between the post treatment changes in total score of ACER test and level of serum BDNF in (G2) was 0.53.The result indicated significant positive correlation between improvement in total score of ACER test and increase in serum BDNF level in the study group (P=0.044).

Conclusion: Aerobic exercises following an acute ischemic stroke in the territory of anterior circulation significantly improve cognitive functions measured in this study by (ACER). This improvement is accompanied by an elevation in the serum level of (BDNF).

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