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EFFECTS OF EXERCISE ON SERUM ISCHEMIA-MODIFIED ALBUMIN, BRAIN-TYPE NATRIURETIC PEPTIDE AND COPEPTIN LEVELS IN BOXERS AND KICK-BOXERS

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BACKGROUND-AIM

Traumatic brain injury (TBI) is commonly seen in boxers and kick-boxers, and they are at risk of acute and long-term neurological effects. Ischemia-modified albumin (IMA) is pointed to be a marker of the occurrence of cardiac ischemia and there are limited data about IMA concentra-tions in noncardiac ischemia. Plasma brain-type natriuretic peptide (BNP) concentrations are reported to be elevated shortly after head injury and BNP is speculated to have role in TBI. The role of copeptin, a sensitive marker for arginine vasopressin release, is examined as a prognostic biomarker in a variety of indications including traumatic brain injury. The aim of this study is to analyze the effects of exercise on serum IMA, BNP and copeptin levels in boxers and kick-boxers.

METHODS

Twenty boxers, twenty-three kick-boxers, and twenty-three controls were included in the study. All participants were subjected to a training program followed by fighting matches and the total activity was called as exercise. The serum IMA, BNP and copeptin concentrations were deter-mined by ELISA methods using commercial kits for each analyte.

RESULTS

The mean age of controls, boxers and kick-boxers were 25.04 ± 3.82, 20.21 ± 3.35 and 20.08 ± 6.33 years respectively. Serum IMA levels measured immediately before and after exercise were 13.95±10.06 and 23.35±9.56 pg/mL, respectively, in boxers, and 12.00±6.47 and 20.95±8.23 pg/mLin kick boxers, respectively. Serum BNP levels measured immediately before and after exercise were 4.93±2.33 and 6.87±1.31 pg/mL in boxers, and 6.52±1.63 and 8.34±1.86 pg/mL in kick boxers, respectively. Serum copeptin levels measured immediately before and after exer-cise were 4.38±1.04 and 60.67±28.35 pg/mL in boxers; 3.81±1.27 and 50.40±33.74 pg/mL in kick boxers, respectively. The comparative analysis of analytes measured showed that the exercise causes significant increase in serum IMA, BNP and copeptin levels both in boxers and kick-boxers (p=0.001).

CONCLUSION

Since identifying new biomarkers in acute and chronic neurological disorders is a considerable field of interest for clinicians, further studies should be undertaken to evaluate the possible role of IMA, BNP and copeptin in TBI pathophysiology.

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