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Chronic head trauma in sports as a cause of hypopituitarism: a survey on Iranian national boxers

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Background: Due to recurrent and progressive head trauma in boxers, this athlete group may face various metabolic, hormonal, and hemodynamic defects. The present study was conducted to study the hormonal and biochemical characteristics of Iranian national boxers.

Hypothesis: Pituitary dysfunction is a common finding in athletes especially among those who suffered head trauma so about 25–50% of head trauma patients have some degrees of pituitary dysfunction.

Methods: A case-control study was conducted with level of evidence 3b. A total of 16 male (age range 19-32 yrs.) boxers of Iranian National Camp participated in the study. Along with this athletic group as the case, 16 male individuals were also randomly selected from archery as the control. We recorded subjects' baseline characteristics including demographic parameters and duration of exercise (in the case group) by interviewing. Participants were advised not to engage in strenuous activities for two days before an exercise test and not to exercise on the day of the test.

Results: Comparing chemical biomarkers between boxers and control groups showed higher serum levels of cortisol and ACTH levels, but lower serum levels of FSH, testosterone, and GH in boxer group when compared with the control group. There was no significant correlation between duration of boxing and serum levels of various biomarkers. Using multivariate linear regression models with the presence of age and BMI variables, showed that the boxing could predict lowering serum levels of FSH ($\beta=1.841$, $p<0.001$), testosterone ($\beta=2.352$, $p<0.001$), and GH ($\beta=0.189$, $p<0.001$) as well as elevating serum levels of cortisol ($\beta=-213.609$, $p<0.001$) and ACTH ($\beta=-45.991$, $p=0.004$).

Conclusions: GH deficiency, hypogonadism, and hypercortisolism may be common findings in boxer due to head trauma.

Biography

Nalan Aksakal is pursuing her Doctorate studies at Anadolu University. She is the Vice-President of Physical Education and Sports Teaching Department, Faculty of Sports Science at Anadolu University since 2014. She published more than three papers in scientific journals. She currently gives lectures on Handball, Sport Pedagogy, and Educational Games.

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