



Interrelation between testosterone, β -estradiol, physical aggression and 2D:4D ratio in young men

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Background:

Aggression development mechanisms research is important for modern society because excessive aggression manifestations are dangerous for individual and society. Testosterone is shown to have the organizing effects on neural circuits in perinatal period [1]. They are realized through testosterone aromatization into β -estradiol in specific brain regions [2]. The ratio of second and fourth fingers lengths (2D:4D ratio) is believed to be retrospective biomarker of exposure to androgens during fetal development [3]. According to this hypothesis 2D:4D ratio is negatively correlated with prenatal testosterone level. However, there are works contradicting this hypothesis [4], and not all authors believe that 2D:4D ratio is good marker of prenatal exposure to androgens [5].

Aim:

The aim of this work was to study interrelations between testosterone, β -estradiol, physical aggression and 2D:4D ratio of the right hand.

Methods:

The study involved young men (14 Indian population persons, 21 Ukrainian population individuals). Physical aggression was evaluated using Buss-Durkee Hostility Inventory. The fingers length measurement was carried out using calipers. Blood serum hormone levels were determined by ELISA kits.

Results:

Moderate but insignificant correlation between total blood testosterone and physical aggression was found both in the general group and men of every population.

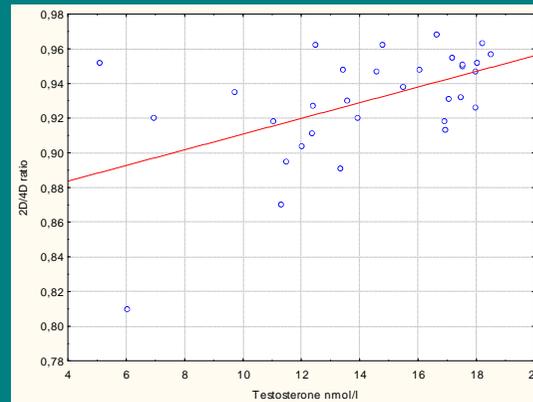


Figure 1: Correlation coefficient between 2D:4D ratio and testosterone in men of total group ($r=+0.51$; $p=0.004$).

Positive correlation was found between testosterone and β -estradiol levels in men of both Indian and Ukrainian populations. In the total group and Indian population men, positive correlation between testosterone level and 2D:4D ratio was revealed (Figure 1).

Conclusion:

The results indicate weak correlation between the baseline testosterone and aggressiveness and the inability to use total blood testosterone as peripheral marker of predisposition to aggression.

Positive correlation between 2D:4D ratio and testosterone indirectly indicates effects on 2D:4D ratio not only of testosterone but also other regulatory factors and the impossibility to use this ratio as retrospective biomarker of exposure to androgens during fetal development.

References:

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