

Menstrual cycle phases effects on the ANT task performance

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Introduction. Many researchers reported that cognitive performance e.g attention appears to be modulated by the fluctuation of sex related hormone levels over the menstrual cycle. This probability is questioned here using the attention network test (ANT) as a hallmark for cognitive function in the young adult women.

Materials and Methods. Fifteen healthy women (20-25 years) with regular menstrual cycles (26-30 days), volunteered to participate in this experiment. All participants were tested three times using the ANT: once during the low steroid menses (cycle day 2-3), once during the ovulatory phase (cycle day 14) and once during the high steroid midluteal phase (cycle day 21-22). Directly after every session, a blood sample was collected. Serum levels of estradiol, progesterone, LH (Luteinizing hormone) and FSH (Follicle-Stimulating hormone) analyzed by ELISA technique.

Results. The results of ANT showed that there was no significant difference in the performance of the alerting and orienting networks between the different phases of the menstrual cycle. Different score in the executive control network was significantly less in the midluteal phase than in the menses and ovulatory phases ($p < 0.001$). The results of hormonal assays showed that there was no significant difference in levels of estradiol and progesterone between the different phases of the menstrual cycle. LH levels were significantly higher in the ovulatory phase than in the other phases of the menstrual cycle ($p < 0.01$). FSH levels were significantly less in the midluteal phase than in the menses and ovulatory phases ($p < 0.001$).

Conclusion. It doesn't seem that sex hormones affect the cognitive function during the phases of the menstrual cycle in the young adult women, yet it needs to perform more investigation specially for the possible effects of LH and FSH fluctuation on attention levels because of the changes observed in the executive network at the midluteal phase while the FSH level was at the minimum.

Keywords: ANT; Menstrual cycle; Cognitive function; Sex hormones