The effect of chronic administration of estradiol on Morris water maze tasks of ovariectomized rats

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Central functions of sex hormones have been widely investigated, among them memory and learning are the most controversial. In the present study the effect of chronic administration of estradiol on learning and memory of ovariectomized rats was tested using Morris water maze. 32 female Wistar rats were divided into four groups: 1) sham, 2) ovariectomized, 3) sham-estradiol, 4) ovariectomized-estradiol. Ovariectomized-estradiol and sham-estradiol groups received weekly injections of estradiol valerate 2mg/kg for 8 weeks. The animals of sham and ovariectomized groups received 1 ml/kg saline instead of estradiol valerate. The animals were examined using Morris water maze and the escape latency and traveled path to reach the platform were compared between groups. Time latency and path length in ovariectomized group was significantly higher than sham group \( p<0.05 \). The animals of ovariectomized-estradiol group had significantly lower traveled path length and time latency compared to ovariectomized group \( p<0.001 \). Time latency and path length in sham-estradiol group was significantly higher than sham group \( p<0.001 \) and \( p<0.01 \) respectively. These findings suggest that chronic administration of estradiol enhances memory function in ovariectomized rats.

Keywords Estradiol, ovariectomized rats, learning, memory