The effect of chronic administration of L-arginine on the learning and memory of estradiol-treated ovariectomized rats tested in the morris water maze.

Hosseini M, Headari R, Oryan S, Hadjzadeh MA, Saffarzadeh F, Khazaei M.

Source
Department of Physiology, Mashhad University of Medical Sciences, Neuroscience Research Center, Mashhad, Iran. hosseinim@MUMS.ac.ir

Abstract

OBJECTIVE: The present study was carried out to evaluate the effect of L-arginine on the learning and memory of estradiol-treated ovariectomized (OVX) rats.

METHODS: Forty-eight rats were divided into six groups: (1) sham, (2) OVX, (3) sham-Est, (4) OVX-Est, (5) sham-Est-LA, and (6) OVX-Est-LA. The animals of the sham-Est and OVX-Est groups were treated by weekly injection of estradiol valerate (2mg/kg). The sham-Est-LA and OVX-Est-LA groups were treated in the same manner but with an additional daily injection of L-arginine (200mg/kg). After eight weeks, animals of all groups were tested in the Morris water maze. The escape latency and path traveled to reach the platform were compared between groups.

RESULTS: Time latency and path length in the OVX group were significantly higher than in the sham group (P<0.05). The OVX-Est group had a significantly shorter traveled path length and time latency compared to the OVX group (P<0.001). Time latency and path length in the sham-Est group was significantly higher than in the sham group (P<0.001). Time latency and path length in the OVX-Est-LA group were significantly higher than in the OVX-Est group.

CONCLUSIONS: These results allow us to propose that chronic treatment with estradiol enhances the spatial learning and memory of OVX rats, and that long term L-arginine treatment attenuates the effects of improvement produced by estradiol in OVX rats.

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