

عنوان مقاله:

?Does Vitamin D Administration Increase the Neuroprotective Effect of Estrogen in Male Rats with Traumatic Brain Injury

مجله انتشار:

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خلاصه مقاله:

Background: In our previous studies, the effect of sex hormones on brain edema reduction after traumatic brain injury (TBI) was demonstrated. In the current study, alone and combined effects of $17-\beta$ estradiol (E_2) and vitamin D (Vit D) on TBI in male rats were investigated. Methods: Male rats were divided into six groups, including sham, TBI, vehicle, E_2 , Vit D, and E_2 +Vit D. In all groups except sham, moderate-intensity diffuse TBI was induced by the Marmarou's method. Vehicle, E_2 , Vit D and their combination were intramuscularly injected one and ۱۲ hours after the TBI. The brain water content, permeability of blood brain barrier (BBB) and histopathological outcome were assessed ۲۴h after TBI. The neurological outcome score was determined

using the veterinary coma scale (VCS).Results: Significant reductions in brain water content ($P<0.001$, $P<0.05$ and $P<0.01$, respectively) and BBB permeability ($P<0.001$) appeared in the treated groups with E γ , Vit D, and E γ +Vit D compared to the vehicle group. Twenty-four hours after the injury, the neurological scores in the E γ , Vit D, and E γ +Vit D groups increased significantly compared to the vehicle group ($P<0.05$). Dramatic improvement in histopathological outcome was also observed in the treated groups compared to the vehicle group.Conclusion: Alone and combined consumption of estrogen and vitamin D may similarly decrease the development of brain edema and improve the neurological and histopathological consequences of TBI. Therefore, consumption of vitamin D did not enhance the neuroprotective effect of estrogen in TBI

کلمات کلیدی:

Traumatic brain injury, Vitamin D, estrogen, Brain edema, Blood brain barrier

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