

EFFECT OF TACROLIMUS ON HIPPOCAMPAL DAMAGE AND SPATIAL MEMORY IMPAIRMENT AFTER TRANSIENT GLOBAL ISCHEMIA IN RAT

Z.N. Sharifi¹, S. Movassaghi¹, F. Abolhassani², G. Hassanzadeh², M.R. Zarrindast³

¹Anatomy Department, School of Medicine, Islamic Azad University Tehran Medical Branch; ²Anatomy Department, School of Medicine, Tehran University of Medical Sciences & ³Pharmacology Department, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Behavioral studies in animals have demonstrated that hippocampal damage can produce learning and memory impairments particularly spatial learning. It has been shown that ischemic damage restricted to only 50% of the CA1 cells of the hippocampus exceed the threshold for production of a behavioral deficit. In this study we seek to evaluate the effect of FK506 (tacrolimus) on the spatial learning in rat subjected to 20-min global transient ischemia/reperfusion. In experimental group 1 rats treated with 1mg/kg tacrolimus intravenously (IV) at the beginning of reperfusion and in experimental group 2, FK506 (the same dose) was given IV 20 min before ischemia. Morris water maze tests were performed during weeks 2 after ischemia for 4 days. Brain tissue was proceeding for tunnel staining. Our data showed: 1- statistically difference were seen between experimental group 1 and control (intact) group so, our data showed that treatment of ischemia with tacrolimus can improve spatial learning and memory. 2- Tacrolimus treatment ameliorated the increase of tunnel –positive cells induced by cerebral ischemia indicating the neuroprotective action of FK506. These results suggest that tacrolimus may reduce cognitive impairment and also may candidate for treatment of ischemia brain damage.