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The role of store operated Ca^{+2} entry in the development of acute retinal ischemia-reperfusion injury in a rat model and the effect of 2-Aminoethyl diphenylborinate.

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Recently, it has been indicated that store operated Ca^{+2} entries (SOCE) is a responsible mechanism from neuronal cell death in ischemic injury. In this study, we aimed to investigate that the roles of SOCE in the acute retinal ischemia-reperfusion (ARIR) damage and the probably protective role of the 2-aminodiphenyl borinate (2-APB) (3-5) in the rat model. Thirty adult Wistar-albino rats were divided into 3 groups as follows: sham group (n=10), ARIR group (n=10) and ARIR10 group (n=10). In the ARIR groups, retinal ischemia was performed by elevating the intraocular pressure to 120 mmHg and was realized reperfusion after an hour. In the sham group, right eyes were cannulated with a 30-gauge needle but not implemented retinal ischemia-reperfusion model. 2-APB (4 mg/kg) was given i.p. 10 minutes before reperfusion to ARIR10 group. Seventy-two hours later, all subjects were sacrificed and their right eyes were enucleated, and then performed histological procedure and evaluation. Histologically, when compare with the sham group, in the ARIR group, a disruption in the regulation of cells in the inner nuclear layer (INL) and retinal ganglion cell layer (RGCL). There was cytoplasmic swelling, vacuolar degeneration and nuclear pyknosis in the RGCs. In the ARIR10 group, there was a notable improvement both in the regulation of cells and other findings. And also, immunostaining of STIM1 and Orai1 in the RGCs was more evident in the ARIR group than sham and ARIR10 groups. The present study shows that SOCE has a role in the development of the acute retinal ischemia damage in the rat retina and this destruction can reduce with the inhibition of the SOCE by using 2APB. We believe that 2APB can be novel treatment approach in the acute retinal ischemia.

Biography

Tuba Demirci has received her MD from Faculty of Medicine, Atatürk University, Turkey in 1995. She has completed her specialization in Histology and Embryology in 2011. Since 2013 she has been working in the Department of Histology and Embryology at the Faculty of Medicine, Atatürk University as an Assistant Professor. Currently she is teaching Histology and Embryology to undergraduate and postgraduate medical students.

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