Abstract View

EFFECTS OF EXOGENOUS NEUROPEPTIDE Y AND NEUROPEPTIDE Y-Y1 RECEPTOR ANTAGONIST ON FOCAL CEREBRAL ISCHEMIA IN THE RAT.

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We studied the effects of exogenous neuropeptide Y (NPY) and BIBP3226, an NPY-Y1 antagonist, on the infarct volume. Adult male Sprague-Dawley rats weighing between 280 and 380 g were anaesthetised with sodium pentobarbital (60 mg/kg, I.P.) to undergo reversible right-sided endovascular middle cerebral artery occlusion (MCAO) for 2 hours. Arterial blood pressure, heart rate and cerebral blood flow (CBF) were monitored, and rectal temperature was kept between 36.5 and 37.5 ºC throughout anesthesia. One dose of NPY (10 or 70 μg/kg), BIBP3226 (5 or 15 μg/kg), or the vehicle was given via slow intra-cerebroventricular (ICV) injection 30 min after onset of ischemia. The rats were decapitated on day 3 of MCAO, and their brains were stained with 2% triphenyltetrazolium chloride for determination of infarction. Results were compared using 2-tailed student's t test. When compared to the relative infarct volume of 15.7±3.6% (mean±SEM; 7 rats) in the control group, exogenous NPY treatment increased the relative infarct volumes (30.3±5.1% in the 10 μg/kg group [9 rats], $P < 0.05$; 24.1±3.8% in the 70 mg/kg group [8 rats]), whereas BIBP3226 treatment reduced the relative infarct volumes (9.7±2.5% in the 5 μg/kg group [7 rats]; 6.5±1.0% in the 15 μg/kg group [9 rats], $P < 0.05$). A major reduction in CBF during reperfusion was observed after exogenous NPY treatment, while there was no significant change in CBF after BIBP3226 administration. Our results suggest that pharmacological inhibition of NPY-Y1 receptor protects against ischemic injury without affecting local CBF during ischemia and reperfusion.

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