عنوان مقاله:

Cardiovascular effects of nitrergic system of the pedunculopon-tine tegmental nucleus in anesthetized rats

محل انتشار:

مجله علوم پایه پزشکی ایران, دوره 20, شماره 7 (سال: 1396)

تعداد صفحات اصل مقاله: 7

نویسندگان:

Mohammad Naser Shafei - *Neurogenic Inflammation Research Center, Faculty of Medicine, Mashhad University of Medical Sciences, Iran*

Tahereh Nikyar - *Department of Physiology, Faculty of Medicine, Mashhad University of Medical Science, Mashhad, Iran*

Mahmoud Hosseini - *Neurocognitive Research Center, Faculty of Medicine, Mashhad University of Medical Science, Mashhad, Iran*

Saeed Niazmand - *Neurogenic Inflammation Research Center, Faculty of Medicine, Mashhad University of Medical Sciences, Iran*

Maryam Paseban - *Department of Physiology, Faculty of Medicine, Mashhad University of Medical Science, Mashhad, Iran*

خلاصه مقاله:

Objective(s): Nitric oxide (NO) is an important neurotransmitter in central nervous system involved in central cardiovascular regulation. The presence of NO in the pedunculopontine tegmental (PPT) nucleus has been shown, but its cardiovascular effect has not been determined. In the present study, the cardiovascular effect of NO in the PPT nucleus was evaluated. Materials and Methods: After induction of anesthesia, a polyethylene catheter (PE-۵۰) filled with heparinized saline inserted into the femoral artery, and the blood pressure (BP) and heart rate (HR) were continuously recorded. Animals were then placed in a stereotaxic apparatus and maximum changes of mean arterial pressure (ΔMAP) and heart rate (ΔHR) after microinjection of two doses of NG-nitro-L-arginine methyl ester (L-NAME, ۳۰ and ۹۰ nmol), L-arginine (L-Arg ۱۰ and ۵۰ nmol) and sodium nitroprusside (SNP, ۹ and ۲۷ nmol) into the PPT were provided and compared with control group (One-way ANOVA). Results: Both doses of L-NAME significantly increased ΔMAP compared to control (PP<۰.۰۱, respectively). ΔHR only in higher dose (۹۰ nmol) significantly increased compared to control (P<۰.۰۵). Two doses of L-Arg (۱۰ and ۵۰ nmol/۱۵۰ nl) had no significant effect on ΔMAP or ΔHR. Higher dose of SNP (۲۷ nmol) significantly decreased ΔMAP (P<۰.۰۵) and its both doses significantly decreased ΔHR compared to control (PP<۰.۰۰۱, respectively). Effect of higher dose on ΔHR was significantly higher than the lower dose (P<۰.۰۵). Conclusion: Our results show an inhibitory effect of the nitrergic system of the PPT on central cardiovascular system.

کلمات کلیدی:

blood pressure, L-NAME, Microinjection, Nitric oxide, Pedunculopontine tegmental, Sodium nitroprusside