Effect of Impaza on Cardiovascular System

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Translated from *Byulleten' Eksperimental'noi Biologii i Meditsiny*, Vol. 148, Suppl. 1, pp. 158-159, September, 2009
Original article submitted August 1, 2008

Experiment on ISIAH rats showed that antibodies to endothelial NO synthase in ultralow doses (impaza) produced a mild and progressive antihypertensive effect slightly inferior to that of losartan. The use of impaza is perspective in patients with erectile dysfunction and cardiovascular pathology.

Key Words: *erectile dysfunction; ultralow doses of antibodies to endothelial NO-synthase; ISIAH*

Arterial hypertension (AH) is an urgent problem of modern medicine. The incidence of AH in men is 39.2%, of them only 5.7% receive effective therapy. The incidence of erectile dysfunction (ED) in patients with AH is 46% [3]. Endothelial dysfunction characterized by imbalance between vasodilator and vasoconstrictor factors [7] plays a key role in the development of cardiovascular pathology and ED [4,7]. Vasodilator function of the endothelium is provided by production of endothelial relaxation factors, primarily NO [5], which is formed from L-arginine in the reaction catalyzed by endothelial NO synthase. NO-dependent relaxation of smooth-muscle cells of the cavernous tissue plays a leading role in the pathogenesis of ED and determines hemodynamic changes in the penis during erection and rigidity phase [3]. The search for preparations capable of improving endothelial function is a perspective trend in modern medicine.

Impaza, a preparation containing ultralow doses of antibodies to endothelial NO synthase (a mixture of homeopathic dilutions C12+C30+C200), is a unique preparation restoring NO production and increasing the content of cGMP in the penile cavernous bodies [3]. Starting from 2001, impaza is effectively used in the treatment of ED and clinical efficiency and safety of this preparation are confirmed in a number of clinical trials [1,2]. However, the capacity of impaza to modulate blood pressure (BP) is still not proven. Here we studied the effect of impaza on the cardiovascular system in rats with inherited stress-induced arterial hypertension (ISIAH rats).

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MATERIALS AND METHODS

The study was carried out on 30 male ISIAH rats with established AH (age 5-6 months, body weight 200-250 g).

Three groups of ISIAH rats (n=10, BP was similar in all groups) received impaza (2.5 ml/kg, *per os*), losartan (10 mg/kg in a volume of 2.5 ml/kg distilled water, *per os*), or distilled water (2.5 ml/kg, *per os*) daily for 10 days. Systolic BP was measured by sphygmography before administration of the test drugs, 2 h after the first dose, on days 5 and 10 of treatment, and 7 days after withdrawal. To exclude the effect of mental stress on BP, the rats were narcotized with ether immediately before BP measurement.

RESULTS

Minor fluctuations of BP were observed in the control group throughout the experimental period; administration of distilled water did not reduce BP in ISIAH rats. In the losartan group, significant decrease in BP (compared to the control and initial values) was observed

0007-4888/09/1483-0518

TABLE 1. Effect of Test Preparations on BP Dynamics in ISIAH Rats (*M*±*m*)

Group	Initial value	2 h after first dose of the drug	On day 5 of treatment	On day 10 of treatment	On day 7 after drug withdrawal
Control group	178.0±2.8	181.5±2.8	183.0±4.0	183.5±3.2	181.5±4.1
Losartan	182.4±3.0	173.00±3.47	164.6±3.8*	166.0±1.9*	176.0±2.2*
Impaza	187.1±2.7	184.0±2.5	180.3±4.3+	176.4±2.9*+	186.5±3.3

Note. $p<0.05$ compared to: *control, +losartan.

on days 5 and 10 of treatment. Impaza in a dose of 2.5 ml/kg reduced BP by 6% in hypertensive ISIAH rats after 10-day (but not after 5-day) treatment compared to the initial values ($p<0.05$). Losartan significantly reduced BP in ISIAH rats by 10% after 5 days. Then its effect was stabilized and persisted for 10 days of treatment (Table 1). It can be hypothesized that this effect can further increase after prolonged administration of impaza. No withdrawal syndrome was associated with losartan and impaza treatment.

Thus, impaza produced a mild antihypertensive effect in ISIAH rats; this effect developed gradually and was somewhat inferior to that of losartan, a classical preparation for the treatment of AH. Our findings attest to advisability of further studies of impaza in AH and to the prospects of the use of this preparation in patients with ED and concomitant cardiovascular disorders.

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