NEW TREATMENT METHODS IN VERAPAMIL POISONING: EXPERIMENTAL STUDIES

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The aim of this study was to evaluate the effectiveness of the treatment with 4-aminopyridine (4-AP, potassium channel inhibitor) and Bay K 8644 (calcium channel activator) in experimentally evoked verapamil poisoning in rats and to compare the results of this treatment with the effectiveness of widely accepted methods (adrenaline, calcium compounds). The experiment was carried out on male and female Wistar rats which were divided into 4 experimental (A, B, C, D) and a control (K) groups. Rats were anesthetized and the abdominal aorta was cannulated for mean arterial pressure and heart rate measurements while caudal vein was cannulated for drug administration. All animals were infused with verapamil (150 mg/kg/h) until 50% reduction of mean arterial pressure and/or heart rate was observed. After verapamil, control animals were given 0.9% NaCl solution and the other groups received 687.5 mg/kg/h of calcium glucolactobionicum (group A), 0.3 mg/kg/h of adrenaline (group B), 2 mg/kg/h of 4-AP (group C) or 2 mg/kg/h of Bay K 8644 (group D). The mean blood pressure and heart rate was checked and ECG was recorded every 10 min. A statistically significant decrease in mortality compared with the control group was observed in animals treated with adrenaline (p ≤ 0.05), Bay K 8644 (p ≤ 0.01) and 4-AP (p ≤ 0.005). The treatment of experimentally evoked poisoning in rats using 4-AP or Bay K 8644 resulted in fast receding of poisoning symptoms: increase in blood pressure and heart rate, receding of bradyarrhythmia and return of sinus rhythm. The results of the study suggest the usefulness of 4-AP and Bay K 8644 in the treatment of verapamil poisoning.

Key words: verapamil, poisoning, 4-aminopyridine, rats