The effect of intravenous nitroglycerine on the treatment of high blood pressure in the emergency department

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Objectives: Hypertension is a common medical problem in the world. Rapid control of blood pressure (BP) is sometimes needed in the emergency department (ED), in order to avoid end-organ damage including ischemia to the central nervous system, the heart, or the kidneys. *Aim:* To study the effect of nitroglycerin iv for the treatment of high BP.

Patients and Methods: 64 patients with mean age 51.68 ± 9.62 with high BP (systolic BP 191.48 ± 9.33 mmHg and diastolic BP 97.97 ± 1.01 mmHg) without signs of end-organ damage, contraindications for the drug were enrolled in this prospective, single blind study. 47% of them were presented with chest pain, but without signs of myocardial ischemia. They were selected to be treated with nitroglycerin iv 5mg/5ml starting with 5mcg/min infusion initially, increased by 5 mcg/min every 3 to 5 minutes as needed up to 20 mcg/min. Electrocardiographic recordings and biochemical balance were obtained during and after the treatment. Echocardiographic examination was performed after the treatment. Checkup of BP was made after 5', 10', 15', 30', 1h, 2h, 4h, and 6h after the treatment, time which was awarded as sufficient for lowering blood pressure $\leq 140/90$ mmHg. Side effects were assessed also.

Results: The significant lowering systolic blood pressure (SBP) and diastolic blood pressure (DBP) was noted after the first 5 min of the treatment (SBP 175.16 ± 4.34 vs 191.48 ± 9.33 mmHg, $p < 0.001$ and DBP 92.03 ± 5.97 vs 97.97 ± 1.01

mmHg, $p < 0.001$). After 20' of the treatment SBP was 136.59 ± 7.46 mmHg, $p < 0.001$, after 1h 129.09 ± 7.41 mmHg, $p < 0.001$ and DBP after 10' of the treatment was reduced in 88.28 ± 6.89 mmHg, $p < 0.001$. After 20' DBP was 82.70 ± 7.10 mmHg, $p < 0.001$ and after 2h 80.00 ± 5.62 mmHg, $p < 0.001$. The mean used dose of nitroglycerine iv was 8 mcg/min. No side effects were noted during the treatment.

Conclusions: The nitroglycerine iv infusion is a safe and very effective drug for the treatment of high BP in the emergency department.

KEYWORDS: hypertension, nitroglycerin, antihypertensive drug.

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