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Effect of pamidronate on the action of catecholamines on blood pressure in the marrow cavity of long bones in rats with prednisolone-induced osteoporosis

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Abstract:
Pamidronate is a representative of bisphosphonates, which are effectively used in the treatment of bone diseases. Although a number of properties of pamidronate have been recognized which influence the metabolic process in bones, the issue of the effect of bisphosphonates on the function of blood circulation and autonomic nervous system in osteoporotic bones remains open. In order to clarify this problem, the present study concentrated on the effects of pamidronate on catecholamine action on blood pressure in the marrow cavity in rats with prednisolone-induced osteoporosis. The animals were divided into 3 groups: I – control rats; II – rats which were given prednisolone at the dose of 5 mg/kg, *im*, for 3 weeks; III – rats which were given prednisolone at the dose of 5 mg/kg, *im* and pamidronate at the dose of 3 mg/kg, *sc* together, for 3 weeks.
The experiments demonstrated that rats with prednisolone-induced osteoporosis displayed a decreased blood pressure in the marrow cavity. In addition, a disordered action of catecholamines (norepinephrine and epinephrine) on blood pressure in the marrow cavity of osteoporotic bone was observed. Pamidronate administration in osteoporotic rats resulted in smaller increases in the blood pressure caused by norepinephrine and epinephrine in the marrow cavity of long bones.

Key words:
blood pressure, catecholamines, osteoporosis, pamidronate, prednisolone, rat