Effects of catecholamines on blood pressure in the long bone marrow cavity in rats with bisphosphonate-induced osteopetrosis

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Abstract:
Osteopetrosis is a congenital metabolic bone disease characterized by skeletal sclerosis resulting from defective osteoclast-mediated bone resorption. The disease may, inter alia, be caused by the administration of bisphosphonates (e.g. pamidronate) particularly in young humans. The issue of the effect of pamidronate-induced osteopetrosis on the function of blood circulation and autonomic nervous system remains open. In order to clarify this problem, the present study concentrated on the effect of catecholamines on blood pressure in the marrow cavity in rats with pamidronate-induced osteopetrosis. The experiments consisted in pamidronate administration to young male Wistar rats at doses of 3 mg/kg sc, for 3 or 6 weeks. Norepinephrine, epinephrine, isoprenaline as well as adrenoceptor antagonists (phentolamine and propranolol) were administered to the controls and the rats with pamidronate-induced osteopetrosis. The experiments demonstrated that rats with pamidronate-induced osteopetrosis displayed increased blood pressure in the marrow cavity. In addition, a disorder in the effect of catecholamines on blood pressure in the marrow cavity of osteopetrotic bone was observed.

Key words:
blood pressure, catecholamines, osteopetrosis, pamidronate, rat