Effects of catecholamines on the intramedullary pressure in the femur in rats with prednisolone-induced osteoporosis

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Abstract:
Osteoporosis is a metabolic bone disease characterized by low bone mass, impaired micro-architecture and susceptibility to fracture. Osteoporosis may be, inter alia, a result of a long-term glucocorticosteroid therapy, e.g. with prednisolone. Although a number of properties of prednisolone in influencing bone metabolism have been recognized, the effect of prednisolone-induced osteoporosis on the function of blood circulation and autonomic nervous system in bones remains open. In order to clarify this problem, the present study concentrated on the effects of catecholamines on intramedullary pressure in rats with prednisolone-induced osteoporosis. Prednisolone was administered to male Wistar rats at the doses of 5 mg/kg im, for 3 weeks. Norepinephrine, epinephrine, isoproterenol as well as adrenoceptor antagonists (phenotamine and propranolol) were administered to the controls and to the rats with prednisolone-induced osteoporosis. The examinations demonstrated that rats with prednisolone-induced osteoporosis displayed a decreased intramedullary pressure. In addition, a disordered effect of catecholamines on intramedullary pressure of osteoporotic bone was observed.

Key words:
catecholamines, intramedullary pressure, osteoporosis, prednisolone, rat