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EFFECTS OF IBANDRONATE, DAILY OR MONTHLY ADMINISTERED, ON BONE QUALITY AND REMODELLING IN ORCHIDECTOMIZED RATS

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Ibandronate (IB) is a new biphosphonate which is being used in the treatment of postmenopausal and corticosteroid osteoporosis, but there are few dates about its usefulness in the prevention and treatment of osteoporosis due to androgen lack. On the other hand, the possibility of its monthly administration, instead of daily, presents an added advantage.

The aim of this work was to study the effects produced by the lack of androgens on several factors related to bone quality in male rats, and the ability of IB, daily (d) or monthly (m) administered, to prevent the effects produced by orchidectomy. Forty, 9 month-old, male Wistar rats were operated (sham-operated or orchidectomized). The following groups were studied: SHAM (n = 10): sham-operated rats, treated with placebo and sacrificed 20 weeks after surgery. OQX (n = 10): orchidectomized rats treated with placebo 20 weeks and sacrificed 20 weeks after surgery (OQX + IBd and OQX + IBm): orchidectomized rats treated with 1 μg/Kg/day or 28 μg/Kg/28 days, subcutaneous injection for 20 weeks.

After sacrifice, bone mineral density (BMD) was determined by DEXA in situ, in the lumbar spine and in the whole left femur. Computerized microtomography (μCT) in femur by Skyscan 1172, serum tartrate resistant acid phosphatase (5b isoenzyme) and osteocalcin were performed.

OQX group presented values of lumbar and femoral BMD lower than SHAM group. Both treatments, IBd and IBm, prevented the loss of BMD due to orchidectomy. Results from μCT showed a decrease in BV/TV, trabecular number, trabecular pattern factor and degree of anisotropy, and an increase in the trabecular separation without differences in their thickness. A redistribution of the model structure from plates to rods was also observed. Ibandronate treatment, both daily and monthly, prevented all these changes. Also, the general increase in bone remodelling due to orchidectomy was not observed in ibandronate treated rats. The above results suggest that monthly treatment with ibandronate is so effective as daily treatment in order to prevent changes in bone quality due to androgen lack in rats.

Conflict of Interest: None declared