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TITLE

Effect of Eicosapentaenoic Acid on Bone Changes due to Methyl prednisolone in rats: a Histomorphometric Approach

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The present study was conducted to clarify effects of eicosapentaenoic acid (EPA) on bone histomorphometric parameters, in the presence of glucocorticoid-induced bone changes in rats, and to compare them with those of antiresorptive drug, alendronate.

For this purpose, 36 male Wistar growing rats divided into 6 groups (n=6 each) and treated with 0.9% NaCl (control), methylprednisolone 7 mg/kg (MP), MP+ alendronate 20µg/kg, MP+80 mg/kg EPA, MP+160 mg/kg EPA and MP+ 320 mg/kg EPA for 6 weeks. At the end of the experiment, serum CTX, Osteocalcin, Calcium and phosphate concentrations, mineral content of L4 vertebra and tibia and fibula, trabecular and osteoid widths of femur and cortical widths and marrow area/cortical area ratio of tibial diaphysis determined.

Results showed there were no significant differences in serum parameters, mineral content of L4 vertebra and tibia and fibula among all groups and MP did not significantly change cortical widths and marrow area/cortical area ratio of tibial diaphysis compared to control ($p>0.05$). Epiphyseal and metaphyseal trabecular widths of femur in MP group decreased compared to control ($p<0.001$ for both parameters), alendronate and EPA at the doses of 160 and 320 mg/kg increased epiphyseal trabecular widths respect to MP group ($p<0.001$); this increase was statistically similar in alendronate and EPA treated groups. EPA at 80 and 160 mg/kg doses increased metaphyseal trabecular widths compared to MP group ($p<0.001$). Endosteal and periosteal osteoid widths of femur increased in MP group compared to control, with $p<0.001$ for both parameters. Alendronate and EPA in three different doses decreased endosteal osteoid widths compared to MP group, ($p<0.001$ for alendronate and $p=0.005$, $p<0.001$ and $p<0.001$ for three EPA treated groups respectively). Effect of alendronate on this parameter was statistically similar to that of 160 and 320mg/kg EPA treated groups but significantly better than 80 mg/kg EPA treated group ($p=0.001$). Only EPA at the dose of 160 mg/kg significantly decreased periosteal osteoid widths compared to MP group ($p<0.001$).

We should concluded that EPA especially at the dose of 160 mg/kg exerts beneficial effects on bone changes due to MP administration in rats; these effects are similar or sometimes even better than common antiresorptive drug, alendronate

Biography

Dr Maryam Rezaeian has completed her DVM at the age of 26 years from University of Tehran, and has got PhD on histology from University of Tehran, Faculty of Veterinary Medicine. She is the profesor in charge of Teaching the (Histology and Histo-technique to undergraduate as well as postgraduate veterinary and medical students and research in many aspects of comparative histology. She has published 2 academic books, more than 60 papers in reputed journals and supervising many DVM and PhD students' theses.