Journal of Dental Research

PTH Increases Jaw Mineral Density in a Rabbit Model of Osteoporosis

M. Bellido[1], L. Lugo[1], S. Castañeda[2], J.A. Roman-Blas[1], J.A. Rufián-Henares[3], M. Navarro-Alarcón[3], R. Largo[1] and G. Herrero-Beaumont[1,*]

[1] Bone and Joint Research Unit, Service of Rheumatology, Fundación Jiménez Díaz, Universidad Autónoma, Av. Reyes Católicos 2, 28040 - Madrid, Spain;
[2] Department of Rheumatology, Hospital de la Princesa, Universidad Autónoma, Madrid, Spain; and
[3] Department of Nutrition and Food Science, Universidad de Granada, Spain

Correspondence: * gherrero@fjd.es

Intermittent parathyroid hormone (PTH) administration has been shown to be a promising therapy for systemic bone loss. Accordingly, we hypothesized that PTH could have positive results in treating oral complications of osteoporosis. Hence, we evaluated both mandibular bone loss and its response to PTH in a rabbit model of osteoporosis induced by ovariectomy and glucocorticoid administration. There was a significant and marked decrease in bone mineral density (BMD), bone mineral content (BMC), and calcium content in ash from the osteoporotic peri-alveolar region, which influenced global jaw loss. Remarkably, PTH (1–34) administration to osteoporotic rabbits almost completely reversed BMD, BMC, and calcium content fall in the peri-alveolar region, subsequently reducing global mandibular bone loss. Thus, although the peri-alveolar region is particularly susceptible to osteoporosis, it also responds well to intermittent PTH. Therefore, these results suggest that PTH might represent a valid therapy for improving the osseointegration of dental implants in persons with osteoporosis.

Key Words: mandibular osteoporosis • intermittent parathyroid hormone • bone mineral density • rabbit model

This version was published on April 1, 2010

Journal of Dental Research, Vol. 89, No. 4, 360-365 (2010)
DOI: 10.1177/0022034510363082