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ONLINE ISSN : 1881-1361

PRINT ISSN : 0287-4547

Dental Materials Journal

Vol. 27 (2008) , No. 5 p.647-653

[\[Image PDF \(276K\)\]](#) [\[References\]](#)**Biomechanical analysis of combined treatment of high calcium and bisphosphonate in tibia of steroid-treated growing-phase rats**[Yusuke YOKOTE](#)¹⁾, [Emi KIMURA](#)²⁾, [Mitsutaka KIMURA](#)²⁾ and [Yoshio KOZONO](#)³⁾

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(Received February 1, 2008)

(Accepted March 17, 2008)

Abstract:

Childhood systemic diseases are commonly treated with steroids. Consequently, steroid-induced osteoporosis is often observed as a side effect of steroid therapy. However, osteoporosis of tibia resulting from steroid therapy has not been reported yet. Herein we constructed a steroid-induced osteoporosis in tibia of the growing phase rats to examine internal structural changes of the bone and tried to find out the effect of bisphosphonates as a new and early treatment method. Biomechanical analysis was performed using two-dimensional microdensitometry and three-dimensional pQCT method. In addition, the following evaluations were carried out: noninvasive bone strength measurements in steroid-induced osteoporotic rat tibiae; comparing the effectiveness of single high-calcium diet *versus* combined treatment of high calcium and bisphosphonate for osteoporosis; and quantitative measurement of four elements (Ca, P, Mg, Zn) in bone matrix. Our data suggested that a combined treatment of high calcium and bisphosphonate was an effective new method to improve and treat steroid-induced osteoporosis in childhood.

Key words:[Bisphosphonate](#), [pQCT](#), [Rat](#)[\[Image PDF \(276K\)\]](#) [\[References\]](#)

To cite this article:

Yusuke YOKOTE, Emi KIMURA, Mitsutaka KIMURA and Yoshio KOZONO.
Biomechanical analysis of combined treatment of high calcium and bisphosphonate in tibia of
steroid-treated growing-phase rats . Dent. Mater. J. 2008; 27: 647-653 .

doi:10.4012/dmj.27.647

JOI JST.JSTAGE/dmj/27.647

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