

BONE

RISEDRONATE AND
MARROW ADIPOSITY

Increased bone marrow adiposity is a risk factor for osteoporosis. Adipocyte infiltration into the bone marrow occurs during aging as a result of increased adipogenesis within the bone marrow at the expense of osteoblastogenesis. Duque and co-investigators previously showed that bisphosphonates inhibit adipogenesis *in vitro*. Now, the team show that risedronate reduces bone marrow adiposity *in vivo* in postmenopausal women—a role that may contribute to the beneficial effect of bisphosphonates on bone mass in this patient group.

The researchers measured the adiposity of bone marrow in transiliac crest bone biopsy samples obtained during a randomized controlled trial of risedronate in postmenopausal women. Before treatment, bone marrow adiposity was similar in samples from women treated with 5 mg of risedronate per day for 3 years ($n = 14$) and placebo-treated individuals ($n = 14$). By contrast, after 3 years, the adiposity of bone marrow had reduced in women treated with risedronate but had increased in placebo-treated women.

“For many years, bisphosphonates have been considered as osteoclast inhibitors, but these new data suggest a new mechanism of action on bone,” explains lead researcher Gustavo Duque of the University of Sydney, Australia. “In this article, we suggest that by decreasing the amount of marrow adiposity, risedronate creates a ‘friendly’ environment for secondary mineralization.”

The findings of Duque and co-investigators may provide a new avenue for osteoporosis treatment. “We have been able to demonstrate that fat loss is bone gain. In addition, marrow fat could be converted back into bone, which is a new and very promising approach for the treatment of osteoporosis in older persons,” concludes Duque.

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Original article Duque, G. *et al.* Effects of risedronate on bone marrow adipocytes in postmenopausal women. *Osteoporos. Int.* doi:10.1007/s00198-010-1353-8