NITROGLYCERIN AND BONE LOSS

Treatment with low doses of transdermal nitroglycerin has no effect on postmenopausal BMD, according to investigators.

Menopause, and its inherent decrease of estrogen levels, is one of the leading causes of osteoporosis in women. Maintenance of BMD can be achieved with estrogen replacement therapy; however, adverse effects can be severe. The nitric oxide donor nitroglycerin can suppress bone loss caused by postmenopausal osteoporosis without concurrent adverse effects and could provide a therapeutic alternative to estrogen.

Wimalawansa *et al.* enrolled 186 postmenopausal women aged 40–65 years in a 3-year, double blind, randomized, placebo-controlled clinical trial, to address whether daily treatment with nitroglycerin ointment prevents postmenopausal loss of BMD.

The researchers assessed changes in lumbar vertebrae and hip BMD, height and bone mineral content after 36 months administration of daily transdermal nitroglycerin or placebo. Loss of BMD and changes in height and bone mineral content did not notably differ between the two groups. Although Wimalawansa *et al.* could not show beneficial effects of nitroglycerin administration, a substantial difference in the occurrence of headaches was detected: 57% of patients who received nitroglycerin reported headaches compared with 14% of patients in the placebo group.

Given the low compliance of study participants, the active nitroglycerin dose analyzed was 70% of the intended dose. The results of the study did not, therefore, support previous findings of efficacy for nitroglycerin as a nitric oxide donor in the treatment of postmenopausal osteoporosis; however, the researchers suggest that further investigations with higher doses of nitroglycerin than used in the current study are necessary to evaluate the benefits of transdermal nitroglycerin therapy.

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Original article Wimalawansa, S. J. *et al.* Transdermal nitroglycerin therapy may not prevent early postmenopausal bone loss. *J. Clin. Endocrinol. Metab.* **94**, 3356–3364 (2009).