TREATMENT OF OSTEOPOROSIS WITH VITAMIN D

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Abstract. A daily intake of 35,000 IU vitamin D2 and calcium supplement for one year could not be demonstrated to influence the bone mineral mass in the forearm of 23 women with osteoporosis.

Andersson et al. (1) studied by biopsy technique the incidence of osteomalacia in elderly women. They found that morphological evidence of the condition was rare but somewhat more common in women in whom clinical data supported the suspicion of osteomalacia. Hazel1 and Oatway (6), Exton-Smith et al. (5) and Chalmers et al. (4) suggested that osteomalacia caused by vitamin D deficiency is common among the elderly, and Smith et al. (9) found that the vitamin D activity in plasma was significantly decreased in women with osteoporosis.

Vitamin D is a component of many drugs, often in combination with calcium. Some of these drugs are recommended for treatment of osteoporosis and, although there is no documented evidence of the effect of treatment, vitamin D is often given in this condition. Some clinicians consider that even in the rich countries there are marginal groups of elderly people with dietary deficiencies. Andersson et al. (1) suggest that vitamin D should be introduced as a general prophylactic treatment for the elderly. Also, the patients frequently seem to benefit from the treatment in that their pain is relieved.

The object of the present study was to evaluate the effect of vitamin D on the bone mass in women with osteoporosis.

MATERIAL AND METHODS

Included in the study were 23 women aged 42–78. The criteria for selection were back pain and radiological signs of spinal osteoporosis. All patients had a serum creatinine within normal limits. Two had been operated upon by gastric resection because of peptic ulcer. In none of the patients, including the two operated upon, were there any signs or symptoms of intestinal malabsorption. Iliac crest biopsy with morphometric evaluation of the osteoid tissue (7) revealed no deviation from normal histology except for a reduction in size and number of bone trabeculae. Serum calcium and serum phosphorus were within normal limits, serum alkaline phosphatase was slightly elevated but not above what may be expected in women with osteoporosis (2) (Table I). According to our criteria these women must be clinically and morphologically classified as cases of idiopathic osteoporosis.

All the patients received a daily supplement of 35,000 IU vitamin D2 in water solution and about 1 g calcium in calcium phosphate tablets. The treatment was continued for about one year.

The bone mineral mass in both forearms was measured at 2–3-month intervals using a photon absorption method. The method, very similar to that of Cameron and Sorenson (3), is based on the attenuation of the radiation from an americium-241 source. It has previously been described in greater detail (8). Measurements were taken 1 and 6 cm proximally to the distal dorsal edge of the ulna. The average of both arms was used for calculation of bone mass; the two sites are presented separately.

Serum calcium, serum phosphorus and serum alkaline phosphatase were measured at 1 week, 2 weeks, 1 month, 3, 6 and 9 months.

RESULTS

Two thirds of the cases were relieved of their back pain during the course of the treatment.

There was no significant improvement of the bone mineral mass in either site of the forearms (Fig. 1).

There were no significant or suggestive changes in the serum calcium, serum phosphorus or serum
alkaline phosphatase during the vitamin D treatment.

The two women who had been operated upon because of peptic ulcer could not be demonstrated to deviate from the rest of the group with regard to bone mass. No side-effects of the treatment were detected.

**DISCUSSION**

The study was designed to investigate possible effects of a high dose of vitamin D on women classified as osteoporotics, and calcium supplement was added to provide at least the daily requirement. The dose of vitamin D was approximated to represent the largest amount which can be given without complication to individuals with normal renal function.

The findings in this study do not support the hypothesis that osteoporosis can be reversed by vitamin D treatment. The bone mass did not decrease during the observation period. However, a loss of bone mineral may not be possible to detect in one year, even in women with osteoporosis. An extended period of observation will be necessary to investigate possible prophylactic effects of the medication.

Finally, the remission of symptoms may well be explained as a placebo effect of the intense medical attention experienced by these patients. Furthermore, the clinical course of spinal osteoporosis is often favourable in that many cases without treatment will in due course be completely relieved of their symptoms until the next episode of vertebral compression.

**ACKNOWLEDGEMENT**

This study was supported by a grant from the Swedish Medical Research Council (Project no. B73-17X-2737-05A).

**REFERENCES**


