

Use of Strontium Ranelate for the Prevention of Osteoporotic Fractures

Strontium ranelate is a dual action bone agent, which reduces bone resorption and increases bone formation. Biochemical markers of bone turnover suggest that the antiresorptive effect of strontium is less than that observed with bisphosphonate treatment, whereas the anabolic action is weaker than that seen with teriparatide (1). Nevertheless, this uncoupling of bone resorption and formation is not seen with other osteoporosis treatments and might be expected to improve bone mineral density (BMD) and architecture, thereby decreasing the risk of fracture.

A randomised controlled trial of strontium ranelate (2 g/day) in 1,649 postmenopausal women with osteoporosis and at least one vertebral fracture showed increases in BMD of 12.7% in the lumbar spine and 8.6% in the hip after three years treatment (1). About 50% of this apparent increase is spurious, due to the skeletal incorporation of strontium, which has a higher atomic number than calcium. This study also demonstrated a 41% reduction in the incidence of new vertebral fractures (1). Another study of strontium in 5,091 women with osteoporosis showed a 16% reduction in the incidence of non-vertebral fractures overall, but no reduction in hip fractures specifically (2). In a *post hoc* sub-group analysis in 1,977 women aged over 74 years with low BMD (T Score < -3.0), strontium reduced hip fracture risk by 36% (2).

Strontium ranelate is available in powder form in sachets, the contents of which are dissolved in water. It should preferably be taken at bedtime, at least two hours after eating, to ensure optimal absorption from the bowel. Strontium has been well tolerated in clinical trials, with no evidence of an increase in upper gastrointestinal side-effects (1,2). Although diarrhoea was reported in 6.1% patients on strontium compared with 3.2% on placebo, this was short lived (2). Phase III clinical trials showed a 30% increase in venous thromboembolism with strontium ranelate, but the significance and putative mechanism for this is unclear.

Strontium ranelate is therefore a welcome addition to the treatment options for postmenopausal osteoporosis. I still consider bisphosphonates as the treatment of choice for postmenopausal women with osteoporosis, because of the greater evidence of safety and efficacy and the convenience of choice of daily or weekly administration. Nevertheless, strontium ranelate provides an alternative option in patients, who are unable to take or tolerate bisphosphonates. It may also be useful in patients who fail to respond to bisphosphonate treatment, but there is no evidence for efficacy in this situation. In view of the data on non-vertebral fractures in women over the age of 75 years, strontium may be particularly useful in elderly women, where there is a dearth of data on the efficacy of other treatments.

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July 2005.

References

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