Osteoporosis in inflammatory bowel disease

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Inflammatory bowel disease (IBD) is associated with an increased prevalence of osteoporosis, a condition characterised by reduced bone mineral density and increased risk of fragility fracture. Although in the majority of patients the absolute risk of fracture is low, a few suffer significant morbidity as a result of fractures. Prediction of those at highest risk remains problematic; glucocorticoid therapy and hypogonadism are likely to be important contributory factors and the increase in risk may be greater in patients with Crohn's disease. Both men and women may be affected and younger age groups are not immune.^{1,2}

A range of therapeutic interventions has been shown to reduce fracture risk in postmenopausal women with osteoporosis.³ These include the bisphosphonates (cyclic etidronate, alendronate, and risedronate), hormone replacement therapy, raloxifene, and combined calcium and vitamin D. Bisphosphonates also prevent bone loss in glucocorticoid treated individuals and in men with idiopathic osteoporosis. All of these interventions act predominantly by inhibiting bone resorption; however, there is currently interest in the development of bone anabolic agents, including parathyroid hormone peptide and strontium ranelate, both of which also have proven antifracture efficacy.^{4,5}

In contrast with the robust evidence base for these interventions in postmenopausal women with osteoporosis, studies in patients with IBD are sparse and have not produced definitive results. Extrapolation of findings from trials in other populations may be difficult for several reasons. Firstly, orally administered agents may not be adequately absorbed in the presence of intestinal disease; this applies particularly to the bisphosphonates, absorption of which is only 1–5%, even in normal subjects. Secondly, the pathophysiology of increased bone fragility in IBD has not been clearly established and may differ from that of postmenopausal osteoporosis. In this respect the contribution of glucocorticoids, which have effects on bone strength that are independent of bone mineral density, is likely to be relevant but IBD has been under-represented in the larger intervention trials in glucocorticoid induced osteoporosis^{6–8} and evidence for efficacy of bisphosphonates in this disease subgroup is inadequate. Finally, as noted above, osteoporosis associated with IBD may affect younger men and premenopausal women, groups that have not been subjected to trials of therapeutic intervention outside the context of glucocorticoid induced osteoporosis.

Notwithstanding the lack of evidence on which to base treatment strategies in IBD, a number of measures can be advocated. The dose of glucocorticoids should be kept to a minimum and, where possible, non-systemic formulations or controlled release budesonide advised.⁹ Vitamin D and calcium supplementation should be advocated in those at risk of deficiency and hormone replacement (oestrogen or testosterone) considered in hypogonadal patients. In view of their proven efficacy in glucocorticoid induced male and

Key points

- Although the absolute risk of fragility fractures is low in most individuals with IBD, a few suffer significant morbidity as a result of these fractures.
- Effective strategies to reduce fracture risk in IBD have not been identified.
- Based on evidence obtained in other patient groups with osteoporosis, bisphosphonates currently represent a firstline therapeutic option, administered orally or parenterally.
- Assessment of fracture probability in individuals with IBD requires further study but intervention should be considered in all those with a previous fragility fracture and in older men and women receiving oral glucocorticoid therapy.

postmenopausal osteoporosis, bisphosphonates are a firstline option in the prevention of osteoporotic fractures associated with IBD. While intestinal absorption of oral alendronate appears to be adequate in patients with quiescent Crohn's disease,¹⁰ in those with more active disease parenteral administration of a bisphosphonate may be more appropriate and avoids the upper gastrointestinal side effects sometimes associated with oral aminobisphosphonates. At the present time pamidronate is most commonly used, intravenous infusions being given at intervals of 3–6 months. However, in the future pamidronate may be replaced by more potent bisphosphonates that have longer lasting effects and can be administered over a shorter time interval, thus obviating the need for hospital admission.

Randomised controlled trials with fracture as the primary end point are not practicable in IBD because of the large sample sizes that would be required. Treatment studies should therefore be designed on the basis of changes in bone mineral density, using agents with proven antifracture efficacy in postmenopausal women with osteoporosis. Identification of individuals at high risk of fracture is an important research priority; at present it seems reasonable to advocate intervention in all those who have sustained a fragility fracture and in older men and women receiving oral glucocorticoid therapy but better assessment tools for the prediction of fracture probability in individuals with IBD are required.

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THERAPY UPDATE

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