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Parathyroid hormone reduces fractures in postmenopausal women with osteoporosis

Research question Is parathyroid hormone a safe and effective treatment for osteoporosis?

Answer Yes. Parathyroid hormone increases bone mineral density, and reduces the risk of fractures in some women

Why did the authors do the study? This systematic review was done to inform the development of a Canadian national guideline on the use of parathyroid hormone to treat osteoporosis. Human parathyroid hormone hPTH 1-34 was licensed in Canada in 2004. The full peptide version hPTH 1-84 is not yet licensed but has been evaluated in randomised controlled trials.

What did they do? They searched systematically through five research databases for all published trials evaluating at least one year of treatment with parathyroid hormone. They included only randomised controlled trials in men or postmenopausal women with osteoporosis. They rated the trials for quality and abstracted individual data on fractures and on bone mineral density, but did not pool the results because of variations in the dose and type of parathyroid hormone. They did not look for unpublished studies, but did ask trial investigators for missing data from published trials. The authors were most interested in the effects of treatment on bone mineral density and the risk of fractures, but they also looked for data on quality of life and low back pain.

What did they find? Twelve trials were included in the review, nine in postmenopausal women and three in men. Ten trials evaluated hPTH 1-34. Only two trials evaluated hPTH 1-84.

The trials showed that: in postmenopausal women with previous fractures, hPTH 1-34 significantly increases bone mineral density at the lumbar spine and femoral neck, and it significantly reduces the risk of vertebral and non-vertebral fractures compared with calcium and vitamin D; hPTH 1-34 increases bone mineral density at the lumbar spine more than alendronate, but it's not clear whether this translates into fewer fractures; hPTH 1-34 also increases bone mineral density in men with osteoporosis, but again there are no data on fractures in this population; the full peptide, hPTH 1-84, increases bone mineral density at the lumbar spine in postmenopausal women, compared with placebo. Parathyroid hormone had no effect on quality of life in these trials, but it did help reduce back pain.

No cases of osteosarcoma were reported in any of the trials, but transient hypercalcaemia was common among patients taking parathyroid hormone (3% to 38% depending on the trial and the dose). Dizziness and leg cramps were also reported more often by patients who were treated than by controls.

What does it mean? hPTH 1-34 looks like an effective treatment for osteoporosis that can help prevent fractures as well as increasing bone mineral density over a treatment period between one and three years. The licensed drug hPTH 1-34 has been better evaluated than the full peptide hPTH 1-84. We don't know yet if the latter can help prevent fractures. In response to this review, the Canadian guidelines now recommend hPTH 1-34 as a first line treatment for women aged 65 years or more with severe osteoporosis and vertebral fractures.

Cranney A et al. Parathyroid hormone for the treatment of osteoporosis: a systematic review. *CMAJ* 2006;175:52-9

Editor's choice

Diminishing returns

There's lots of clinical stuff in the *BMJ* this week—chosen because we think it will help doctors make better decisions.

From their randomised controlled trial of antibiotics for acute conjunctivitis, Everitt and colleagues (p 321) conclude that the best strategy is delayed prescribing (a prescription to be collected at the patient's discretion after three days). Remco Rietveld and colleagues conclude that withholding antibiotics for such minor complaints can be considered harmless in Western countries, where the incidence of complications has declined sharply in the past decades. Antibiotics may thus be reserved for more serious conditions, such as infective endocarditis—linked nowadays in the West more to intravenous drug misuse, degenerative valve disease, and nosocomial infection than to rheumatic fever. Rhys Beynon and colleagues advocate a multidisciplinary approach in their clinical review (p 334).

Meanwhile there's good news for one old drug and bad news for another. Wallenborn and colleagues help to rehabilitate metoclopramide as a treatment for postoperative nausea and vomiting (p 324), while Verhamme and colleagues report that spironolactone nearly trebles the risk of upper gastrointestinal events (p 330).

This is perhaps the sort of stuff that Tara Hunt thought she'd be focusing on after discovering, in an unexpected epiphany at the age of 26, that she wanted to be a doctor. Instead, after several happy years studying medicine and getting into debt, she finds her enthusiasm dampened and her pride in her profession confused (p 359). "When did it all become about getting published, about audits and research, points on your curriculum vitae, and ticking the right boxes?...Shouldn't I be busy updating myself on published best practice rather than trying my best to get published?"

Readers may sympathise but, as Nick Black and John Brown point out (p 312), there's more to best practice than just giving the most effective treatments. The only way seriously to improve outcomes, they say, is by delivering care more efficiently. To do this we need meaningful and accurate measures for productivity, something they fear we don't yet have. Hardest of all is to be sure that measures take account of the humanity of care as well as procedural and clinical outcomes. Better data on the process and outcomes of care should be collected routinely, they say.

Ultimately what we need in health care, says Stephen Black, a management consultant, is not more resources but more and better management (p 358). "Investing more in better organisation, good managers, and appropriate IT may be a far more effective way to improve the working lives of doctors and nurses than recruiting more doctors and nurses."

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