What are effective strategies for reducing the risk of steroid-induced osteoporosis?

EVIDENCE-BASED ANSWER Calcium, in combination with vitamin D, prevents bone loss and is recommended in all patients. (Grade of recommendation: A, based on systematic reviews of randomized controlled trials [RCTs]). Alendronate and risedronate prevent fractures and should be considered for all patients at increased risk of fracture (5 mg of prednisone or equivalent, daily for longer than 3 months). (Grade of recommendation: A, based on RCTs) Replacement of sex hormones in hypogonadal patients prevents bone loss and increases bone mineral density (BMD). (Grade of recommendation: A for women, based on RCTs; B for men, based on one randomized, crossover trial.) Calcitonin prevents bone loss for up to 1 year. (Grade of recommendation: A, based on systematic review.)

EVIDENCE SUMMARY A systematic review of 5 RCTs (N=274) confirmed clinically and statistically significant prevention of bone loss at the lumbar spine for patients receiving glucocorticoids who also received calcium (500–1000 mg daily) and vitamin D (400–800 IU) daily.[1] A systematic review found that patients receiving steroids longer than 3 months gained bone mass when placed on a bisphosphonate.[2] A two-year RCT of 208 patients receiving steroids who also received alendronate or placebo demonstrated an incidence of vertebral fracture of 0.7% and 6.8% (NNT=16; RRR=90%; ARR = 5.9%; P = .026), respectively.[3] A 48-week RCT involving 477 patients receiving steroids who also received alendronate or placebo demonstrated a 2.3% and 3.7% in incidence of vertebral fracture, respectively (RRR = 38%; ARR = 1.4%; P = NS).[4] A 1-year RCT of 184 men on or off steroids using risedronate found an 82.4% decreased incidence of vertebral fractures compared with those who received placebo (NNT = 5; P = .008).[5]

In hypogonadal patients, several small studies have shown that replacement of sex hormones (estrogen in women and testosterone in men) increases lumbar spine BMD (women 2% and 3–4%; men 5%; all $P < .05$). Fracture reduction and risk of long-term use were not studied.[6–8] In a systematic review of 9 RCTs, including 441 patients, calcitonin preserved bone mass in the lumbar spine but not the femoral neck during the first year of steroid therapy. Lumbar spine BMD values with calcitonin were significantly higher than with placebo at 6 and 12 months, but were similar at 24 months.[9]

RECOMMENDATIONS FROM OTHERS The American College of Rheumatology recommends calcium and vitamin D be offered to all patients initiating a regimen of prednisone 5 mg/d or its equivalent with expected duration of longer than 3 months. Bisphosphonates should be prescribed for all patients starting steroids and for patients receiving steroids with a T-score less than -1.0; however they should be used with caution in premenopausal women.[8] A leading researcher states the rank order for prevention is a bisphosphonate followed by a vitamin D metabolite or hormone replacement.[10]

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