Preliminary clinical criteria had moderate sensitivity but low specificity for detecting osteoporosis in rheumatoid arthritis

Haugeberg G, Ørstavik RE, Uhlig T, et al. **Clinical decision rules in rheumatoid arthritis: do they identify patients at high risk for osteoporosis? Testing clinical criteria in a population based cohort of patients with rheumatoid arthritis recruited from the Oslo Rheumatoid Arthritis Register.** Ann Rheum Dis. 2002;61:1085-9.

QUESTION

In patients with rheumatoid arthritis (RA), what is the accuracy of 3-item criteria based on age, disease activity, and functional status for identifying patients at increased risk for osteoporosis?

DESIGN

Clinical decision criteria proposed in a previous study were evaluated using data from a population-based cohort of patients (followed for 2 y) with RA recruited from the Oslo RA Register.

SETTING

Oslo, Norway.

PATIENTS

287 patients (mean age 58 y, 82% women) with RA who had a complete data set for hip and spine bone mineral density measurements, Health Assessment Questionnaire (HAQ) (score range 0 to 3, higher scores indicate worse disability), and C-reactive protein (CRP) or erythrocyte sedimentation rate (ESR) at 2 years.

DESCRIPTION OF PREDICTION GUIDE

Patients with RA who were at high risk for osteoporosis were identified according to inflammation, age, and immobility. To meet the criteria, 2 of the following 3 preliminary clinical criteria had to be present: 1) high disease activity defined as mean CRP > 20 mg/L or mean ESR > 20 mm per first hour or both; 2) older age defined for women as > 50 years and men as > 60 years; and 3) immobility, defined as HAQ ≥ 1.25. Classification using the clinical decision rule was compared with standardized bone mineral density measurements (T and Z scores) for diagnosis of osteoporosis.

MAIN OUTCOME MEASURES

Sensitivity, specificity, and positive and negative likelihood ratios.

MAIN RESULTS

62 patients (22%) had osteoporosis at the femoral neck or spine (T score ≤ −2.5; WHO definition of osteoporosis). The sensitivity, specificity, and positive and negative likelihood ratios for the clinical decision criteria are in the Table.

CONCLUSION

In patients with rheumatoid arthritis, preliminary clinical criteria based on age, inflammation, and immobility had moderate sensitivity and low specificity for identifying patients at high risk for osteoporosis.

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For correspondence: Dr. G. Haugeberg, Leeds University, Leeds, England, UK. E-mail glennhaugeberg@operamail.com. ■

Operating characteristics of preliminary clinical criteria based on age, inflammation, and immobility for identifying patients at high risk for osteoporosis in rheumatoid arthritis*

Test	Sensitivity	Specificity	+LR	−LR
T score ≤ −2.5	73%	56%	1.66	0.48
T score ≤ −1	59%	66%	1.74	0.62
Z score ≤ −1	58%	54%	1.26	0.78

*T and Z scores are standardized bone mineral density measurements. Diagnostic terms defined in Glossary; LRs calculated from data in article.

COMMENTARY

The study by Haugeberg and colleagues assessed the accuracy of 3 risk factors (age, inflammatory disease activity, and functional class) for identifying patients with RA who are at risk for osteoporosis. These items had reasonable sensitivity but only fair specificity.

Several questions arise from this investigation. Although all 3 variables tested have been shown to be associated with low bone mass, there are other known risk factors. Both antiresorptive agents and corticosteroid use could have influenced bone mass in this cohort. Patients receiving antiresorptive agents may have had higher bone mass, whereas those receiving corticosteroids may have had an increased risk for osteoporosis (sensitivity was lower and specificity higher in patients who had never used corticosteroids than in the whole cohort). Corticosteroid use has been found to be a relatively sensitive measure of osteoporosis in patients with RA (1). Also, other known risk factors for hip fractures, such as a previous low-impact fracture, were not included in the study (2, 3).

An interesting aspect of this study was the use of CRP to measure disease activity. CRP production is influenced by interleukin-1 and -6, which increase the maturation and activity of osteoclasts. Systemic inflammation in RA measured by CRP serum levels may influence bone mass in RA. Additional studies need to be done with adjustment for these potentially confounding variables.

The results of this trial suggest that the 3 clinical risk factors studied are not strong predictors of osteoporosis in patients with RA. In postmenopausal women, it is not clinical risk factors but bone mineral density measurement that best predicts osteoporosis.

Nancy Lane, MD
University of California at San Francisco
San Francisco, California, USA

References

1. National Osteoporosis Foundation. Osteoporosis: review of the evidence for prevention, diagnosis and treatment and cost-effectiveness analysis: status report. Osteoporos Int. 1998;8(Suppl 4):S1-88.
2. **Cumming RG, Nevitt MC, Cummings SR.** Epidemiology of hip fractures. Epidemiol Rev. 1997;19:244-57.
3. **Naganathan V, Jones G, Nash P, et al.** Vertebral fracture risk with long-term corticosteroid therapy: prevalence and relation to age, bone density, and corticosteroid use. Arch Intern Med. 2000;160:2917-22.