

Study examines relationship between bone density and erosion in arthritis

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Rheumatoid arthritis (RA), the most common form of inflammatory arthritis, affects almost three percent of people over age 65. RA patients experience pain, functional limitations and two forms of disabling bone disease: focal erosions and osteoporosis. After five years of disease, up to 50 percent of RA patients show evidence of focal erosions and RA doubles the risk of osteoporosis and fractures. A new study examined the relationship between these two RA-related processes, in the hopes of providing insight into the underlying pathophysiology of RA-related bone disease. The study was published in the June issue of *Arthritis & Rheumatism*.

Led by Daniel H. Solomon of Brigham and Women's Hospital in Boston, the study involved 163 postmenopausal women with RA, none of whom were taking [osteoporosis](#) medications. Participants underwent bone density scans of the hip and spine, as well as X-rays of the hand to determine if they had bone erosions.

The results showed that hip bone mineral density (BMD) correlated with bone erosion, but the relationship was not statistically significant after adjusting for clinical factors such as age, BMI and use of oral glucocorticoids used to treat RA. The relationship did appear stronger, however, in patients with early RA. "Our findings suggest that the relationship between focal erosions and generalized osteoporosis is complicated and modified by many aspects of RA and other factors," the authors state. They point out that with longer disease duration, other variables such as the use of disease-modifying antirheumatic drugs (DMARDs), disease activity and markers of inflammation may dilute the relationship between focal erosions and hip BMD.

As to why there was a stronger relationship between hip BMD and erosions than with spine BMD, there are several possible explanations. It's possible that the inflammation underlying RA

affects the hip more than the spine or that the effects are more apparent at the hip, which may more closely relate to joint mobility and overall functional status.

Several prior studies have examined the bone manifestations of RA, but the current study is one of the only ones to date that has focused on the relationship between two skeletal manifestations of the disease. The authors note that almost all participants were taking DMARDs, which may blunt the relationship between erosions and BMD. Also, patients were not currently taking glucocorticoids or osteoporosis medications but may have in the past, which might have had an effect on the results. Supplemental vitamin D use may also have had an unforeseen effect.

"It may be that the presumed association between erosions and BMD is most relevant with regard to patients with severe or early untreated RA," the authors conclude. This could become increasingly important as more bone-directed treatments become part of RA treatment protocols. For example, data from trials of a monoclonal antibody directed at a molecule important in bone metabolism suggest that it may be effective at improving BMD and reducing progression of erosion. Since focal erosions and osteoporosis may be manifestations of a similar inflammatory response, further studies may clarify important roles of inflammation in both of these processes in RA.

More information: "The Relationship Between Focal Erosions and Generalized Osteoporosis in Postmenopausal Women with [Rheumatoid Arthritis](#)," Daniel H. Solomon, Joel S. Finkelstein, Nancy Shadick, Meryl S. LeBoff, Carl S. Winalski, Margaret Stedman, Roberta Glass, M. Alan Brookhart, Michael E. Weinblatt, Ellen M. Gravallese, *Arthritis & Rheumatism*, June 2009. <http://www3.interscience.wiley.com/journal/76509746/home>

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