# Risk of Myocardial Infarction Increased With Systemic Sclerosis

Written by Wayne Kuznar

Evidence of macrovascular involvement and premature atherosclerosis in patients with systemic sclerosis (SSc) has been emerging. The risk of myocardial infarction (MI) was found to be increased in patients with incident SSc in a large population-based study discussed by J. Antonio Avina-Zubieta, MD, PhD, University of British Columbia, Vancouver, Canada.

In SSc, cardiovascular disease is the leading non-SSc cause of death [Tyndall AJ et al *BMJ* 2010]. Previous studies in which a link between SSc and premature atherosclerosis was discovered did not adjust for medication use and other relevant confounders or they relied on selected populations, obscuring the true risk of MI in this population [Nordin A et al. *Arthritis Res Ther* 2013; Ngian GS et al. *Ann Rheum Dis* 2012].

Using administrative health data from all 4.7 million residents of British Columbia, Canada, Prof. Avina-Zubieta and colleagues sought to estimate the risk of MI in patients with incident SSc at the general population level and to assess time trends in the risk of MI in relation to the onset of SSc. Some 1245 patients with SSc were identified from the database. Each patient was matched to 10 controls from the general population based on birth year, sex, and calendar year of exposure, for a total of 12,678 controls. The risk of incident MI in the SSc cohort relative to the general population was adjusted for age, sex, and comorbidities. The mean Charlson comorbidity index was 1.1 in the SSc cohort and 0.3 in the matched controls. At the time of SSc diagnosis, mean patient age was ~53 years. Consistent with the disposition of SSc, >80% of the study population were women.

Over an average follow-up of 3.5 years, incident MI occurred in 89 of the SSc group and in 289 controls, for an incidence rate of 20.2 per 1000 person-years among the SSc cohort and 5.3 per 1000 person-years among the controls. Using a multivariable adjusted model, the relative risk (RR) of incident MI was 4.1 (95% CI, 3.1 to 5.4) in the SSc cohort compared with the general population. The increased adjusted RR of MI in the SSc cohort remained significant on sensitivity analyses adjusting for potential unmeasured confounders (Table1).

When analyzed according to the follow-up period, the age- and sex-adjusted RR of MI among patients with SSc was highest within the first year of follow-up, at 8.2 (95% CI, 5.3 to 12.4; Table 2).

The increased RR of MI among patients with SSc was attenuated with longer duration of follow-up, to an age- and sex-adjusted RR of 3.1 during follow-up Years 1 through 5, and 1.4 with >5 years of follow-up.

**Table 1.** Sensitivity Analysis, Adjusting for Potential Unmeasured Confounders

| Hypothetical Prevalence | Hypothetical Odds Ratio | MI Risk of SSc Adjusted RR (95% CI) |
|---|---|---|
| 10% | 1.3 | 4.1 (3.1–5.3) |
| 10% | 3.0 | 3.6 (2.7–4.7) |
| 20% | 1.3 | 4.0 (3.1–5.3) |
| 20% | 3.0 | 3.1 (2.3–4.1) |

**Table 2.** Risk of MI According to Follow-up Period

| Age-Sex Adjusted RR | < 1 Year of Follow-Up | 1–5 Years of Follow-Up | > 5 Years of Follow-Up |
|---|---|---|---|
| RR (95% CI) | 8.2 (5.3–12.4) | 3.1 (2.1–4.4) | 1.4 (0.9–3.4) |

When analyzed according to age, the adjusted RR of MI in SSc patients was highest in the group aged 45 to 59 years old (RR, 7.4; 95% CI, 3.5 to 15.7 compared with the group aged <45 years).

The findings support increased vigilance in cardiovascular disease prevention, surveillance, and risk modification in patients with SSc, said Prof. Avina-Zubieta.

# Patellofemoral Brace Reduces Pain, Bone Marrow Lesion Volume in Knee Osteoarthritis

Written by Wayne Kuznar

Bone marrow lesions may represent a viable target in the treatment of osteoarthritis (OA). David T. Felson, MD, University of Manchester, Manchester, United Kingdom, described a randomized clinical trial in which a patellofemoral (PF) knee brace reduced both the volume of bone marrow lesions in the PF joint and PF-related knee pain.

Bone marrow lesions represent lesions in subchondral bone caused in part by focal stress in the OA knee joint. Focal contact stress across the joint during weight bearing can cause bone trauma that leads to bone marrow lesions. Bone marrow lesions predict later cartilage loss at the same anatomic location and correlate with pain and pain severity. For these reasons, and because bone marrow lesion volumes fluctuate substantially in as little as 6 weeks [Felson DT et al. *Osteoarthritis Cartilage* 2012], bone marrow lesion volume appears to be a good short-term structural outcome measure in OA trials, said Prof. Felson. PF bracing can increase contact area in the PF joint [Powers CM et al. *Clin J Sports Med* 2004], with the potential to reduce contact stress and shrink bone marrow lesions, he said, in explaining the rationale for a study of bracing in the disease.