

# An Assessment of Back Pain and the Prevalence of Sacroiliitis in Sarcoidosis\*

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**Objectives:** Sarcoidosis is a chronic granulomatous multisystem disease in which arthritis is relatively common. Arthritis of the sacroiliac joints (sacroiliitis) has been described in sarcoidosis but is thought to be rare. The objective of this study was to determine the prevalence of sacroiliitis in a secondary-care population of patients with sarcoidosis.

**Methods:** Patients attending a specialist secondary-care sarcoidosis clinic underwent evaluation of spinal symptoms using a standard back pain questionnaire, examination of spinal mobility, and laboratory measurements of erythrocyte sedimentation rate, C-reactive protein, serum angiotensin-converting enzyme, and neopterin/creatinine ratio. Tissue typing for the presence of the human leukocyte antigen (HLA)-B27 allele was undertaken. Radiographs of the sacroiliac joints were obtained in each patient and reviewed independently by two observers; a further observer reviewed disputed radiographs.

**Results:** Sixty-one patients completed the assessments (80.3% of all patients invited to participate). Forty-nine of 61 patients (80.3%) reported having back pain at some point in their lives. Thirty-one of 61 patients (50.8%) had a score on the back pain questionnaire suggestive of inflammatory spinal disease, but only 3 of these patients had erosive damage of the sacroiliac joints on radiography indicating sacroiliitis. One further patient had erosive damage on radiography, making a total of four individuals with evidence of sacroiliitis, a prevalence of 6.6%. Four patients (one patient with sacroiliitis) were positive for HLA-B27. The back pain questionnaire had a sensitivity of 75% and a specificity of 51% for sacroiliitis in this population.

**Conclusion:** The prevalence of spondyloarthritis in the normal population has been estimated to be 1.9%. In the sarcoid population studied the prevalence was 6.6% suggesting a possible association between these two conditions. The standard back pain questionnaire for the identification of inflammatory spinal disease had a low sensitivity and specificity in this population. (CHEST 2005; 127:192–196)

**Key words:** arthritis; back pain; sacroiliitis; sarcoidosis

**Abbreviation:** HLA = human leukocyte antigen

Sarcoidosis is a multisystem granulomatous disease commonly affecting the respiratory tract. Respiratory involvement occurs in practically all patients at some point during their disease. Arthritis occurs in 15 to 25% of patients.<sup>1</sup> Two major types of arthritis

have been classically distinguished: an acute transient type characterized by acute large joint (usually ankle) arthropathy, bilateral hilar lymphadenopathy, and erythema nodosum (Löfgren's syndrome); and a chronic form, which affects multiple joints, causes recurrent episodes of polyarthritis, and frequently results in joint deformity. The joints most frequently involved in chronic sarcoid arthropathy are the knees and ankles, but the shoulders, wrists, and small joints of the hands and feet can also be affected. Synovial histology may show the presence of noncaseating granuloma or nonspecific inflammatory synovitis.

Sacroiliitis is an inflammatory arthritis of the sacroiliac joints, which causes typical radiographic changes. Sacroiliitis causes pain and stiffness of the lower back, frequently radiating into the buttocks. Typical features of sacroiliitis include onset of pain before the age of 40 years, persistent pain for > 3

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months, resolution of the pain and stiffness with exercise, and back stiffness particularly after resting and in the morning. Sacroiliitis occurs in a number of rheumatologic conditions usually in association with axial arthritis (spondyloarthropathy), such as ankylosing spondylitis, psoriatic spondyloarthropathy, and reactive arthritis. Infection of the sacroiliac joint can mimic sacroiliitis and needs to be excluded in suspected cases. Sacroiliitis has been described in sarcoidosis, mainly in isolated case reports, and is thought to be very rare.<sup>2-4</sup> Sacroiliac joint biopsy in one of these cases revealed noncaseating granuloma consistent with sarcoid infiltration,<sup>3</sup> confirming that sarcoidosis can cause sacroiliitis. We undertook this study to assess the prevalence of sacroiliitis in sarcoidosis and the reliability of common methods of screening for inflammatory back disease in this population.

## MATERIALS AND METHODS

All patients attending a secondary care sarcoidosis clinic were invited to attend for assessment. Demographic details were collected. Review of the case notes was undertaken in each case to determine the evidence for a diagnosis of sarcoidosis and the organs involved. The "gold standard" for diagnosis was histologic evidence of noncaseating granuloma from a biopsy of affected tissue after other causes of granulomatous disease had been excluded. All patients had undergone a number of investigations to rule out other causes of granulomatous disease, such as bacterial and fungal infections and foreign body reactions appropriate to their symptoms, clinical presentation, and length of diagnosis.

Patients completed a validated back pain questionnaire, which is designed to identify people with inflammatory back disease (Table 1). A score of  $\geq 3$  is suggestive of an inflammatory cause for the back pain (85% specific, 95% sensitive in the general population).<sup>5</sup> Patients underwent standard assessment of back mobility involving measurement of tragus-wall distance, finger-to-floor distance, chest expansion, and modified Schöbers test (a test of spinal mobility between L1 and S1 with a measurement of  $\geq 5$  cm being normal).<sup>6</sup>

Samples for laboratory measurement of erythrocyte sedimentation rate, C-reactive protein, serum angiotensin-converting

enzyme, and neopterin/creatinine ratio were obtained to assess the activity of the sarcoidosis. Patients were also tissue-typed for the presence of human leukocyte antigen (HLA)-B27, the HLA allele present in 95% of patients with ankylosing spondylitis. There are no scoring systems that combine clinical and laboratory parameters to predict the presence of sacroiliitis in the general population.

All patients underwent radiography of their sacroiliac joints to look for erosive disease of the sacroiliac joints signifying sacroiliitis. One rheumatologist and one radiologist, blinded to the questionnaire, laboratory and clinical examination results, independently reviewed the radiographs. A second similarly blinded radiologist reviewed disputed radiographs. Ethical committee approval was granted for this study.

## RESULTS

Seventy-six patients were invited to participate; of them, 61 patients (80.3%) completed the assessments (28 men and 33 women). The majority of the patients were white (59 patients, 96.7%), and two patients were Asian (3.3%). Forty-eight patients (78.7%) had had the diagnosis of sarcoidosis confirmed on biopsy (lung biopsy,  $n = 23$  [47.9%]; Kveim tests with biopsy of nodule,  $n = 8$  [16.7%]; lymph node biopsy,  $n = 5$  [10.4%]; skin biopsy,  $n = 6$  [12.5%]; parotid gland biopsy,  $n = 3$  [6.25%]; liver biopsy,  $n = 2$  [4.2%]; and ocular biopsy,  $n = 1$  [2.1%]). The remaining 13 patients (21.3%) were considered on clinical grounds to have sarcoidosis: 8 patients had typical Löfgren syndrome, and the remaining 5 patients had a combination of skin, lung, and eye involvement that was believed to be due to sarcoidosis after other causes were ruled out. Demographic data are shown in Table 2. Four of the patients (6.6%) had erosive disease of their sacroiliac joints: one patient had bilateral involvement, the other three patients had unilateral involvement.

Forty-nine patients (80.3%) had back pain at some point in their lives. Thirty-one patients (50.8%) scored  $\geq 3$  on the back pain questionnaire. Three of the four patients (75%) with sacroiliitis scored  $\geq 3$ ; the mean score for the sacroiliitis group was 3.0, compared with 2.25 ( $p = 0.3$ ) for the nonsacroiliitis group. The back pain questionnaire had a sensitivity of 75% and a specificity of 51% for sacroiliitis in this population.

The results of laboratory investigations and clinical measurements are shown in Table 2. There were no significant differences between the groups for any of the parameters assessed. Four patients were positive for HLA-B27; one of these patients had sacroiliitis.

## DISCUSSION

Back pain is ubiquitous in the Western world; up to 80% of the population will have back pain at some

**Table 1—Back Pain Questionnaire\***

Questions	Score 1	Score 0
Has your back pain ever lasted > 3 months at any one point?	Yes	No
Is your back pain associated with stiffness in the morning?	Yes	No
Did your back pain come on suddenly over days or slowly over months?	Slowly	Suddenly
Is your back pain eased by rest or exercise?	Exercise	Rest
Did your back pain come on before or after the age of 40 years?	Before	After

\*A score  $\geq 3$  is suggestive of an inflammatory cause for back pain.<sup>20</sup>

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