Inflammatory Spinal Disease in Psoriatic Arthritis: A Report from the GRAPPA 2010 Annual Meeting

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ABSTRACT. Diagnosing axial disease in patients with psoriatic arthritis (PsA) has been largely dependent on identifying inflammatory back pain (IBP), which itself has been difficult to define. We review the criteria used to identify IBP in patients with ankylosing spondylitis (AS) and other forms of spondyloarthritis. Recently, the Ankylosing SpondyloArthritis International Society (ASAS) developed a list of clinical and radiographic criteria for identifying IBP in patients with AS. However, it is more difficult to identify IBP in patients with PsA because generally they have less pain than patients with rheumatoid arthritis or AS. Further, PsA patients may have clinical symptoms of pain but negative radiographs. It may be more useful to identify sacroiliitis or syndesmophytes by magnetic resonance imaging (MRI), since MRI identifies lesions in the sacroiliac joints and the spine much earlier than can be detected on radiographs. In summary, all patients with PsA should be assessed for axial involvement with history, physical examination, and imaging. Patients with psoriasis whose history includes onset of back pain before age 40 years, the presence of night pain, and improvement with exercise but not with rest, or who have limited neck or back mobility, should be referred to a rheumatologist. (J Rheumatol 2012;39:418–20; doi:10.3899/jrheum.111238)

Key Indexing Terms:
INFLAMMATORY BACK PAIN
MAGNETIC RESONANCE IMAGING
AXIAL PSORIATIC ARTHRITIS
ANKYLOSING SPONDYLITIS

Inflammatory spinal disease is one of 3 musculoskeletal inflammatory features on which the classification criteria for psoriatic arthritis (PsA) developed by the CASPAR (ClASsification of Psoriatic ARthritis) study group may be applied[1]. Thus, the CASPAR criteria can only be applied to an individual who has one of the 3 components of inflammatory musculoskeletal disease: inflammatory arthritis, spondylitis, or enthesitis. The definition of axial disease in PsA has been difficult, however, as clinical studies have used several different patient inclusion criteria[2]. One set is the New York criteria for the classification of ankylosing spondylitis (AS), which includes evidence of spinal mobility restriction as well as radiographic evidence of sacroiliitis[3]. However, these criteria may not function as well among patients with axial PsA since axial disease in these patients is not as severe as in patients with AS[4].

The definition of spondylitis is predicated on the presence of inflammatory back pain (IBP). Therefore, it is important to be able to identify IBP and differentiate it from other forms of chronic back pain. IBP is also the cornerstone of several attempts to classify spondyloarthritis (SpA).

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How do we define IBP? A number of researchers have tried to develop a definition, primarily in their work with patients with AS. Calin, *et al* developed a tool based on a 17-item questionnaire administered to 3 groups of patients: 42 patients with AS who were HLA-B27-positive, 21 patients attending an orthopedic clinic and known to have normal sacroiliac joints, and 75 controls from other clinics. While 61% of the patients admitted to having back pain, those patients with AS were identified by 5 items on the questionnaire: age at onset less than 40 years, insidious onset, duration of at least 3 months, association with morning stiffness, and improvement with exercise. The presence of at least 4 of these 5 items achieved 95% sensitivity and 85% specificity in this study of 138 patients[5]. Subsequent studies found the specificity of Calin's screening test to be about 75% and the sensitivity to be only about 23%[6].

In another study, Rudwaleit and colleagues assessed the clinical history of 213 patients under 50 years of age who had chronic back pain. Among those patients were 101 with AS and 112 with mechanical low back pain (MLBP). When the Calin criteria were applied to these patients, a sensitivity of 59.4% and a specificity of 83.9% were found. Single clinical variables and combinations of variables were compared between the AS and MLBP patient groups. Morning stiffness > 30 minutes' duration, age at onset of back pain, no improvement in back pain with rest, awakening because of back pain during the second half of the night only, alternating buttock pain, and time period of the onset of back pain were identified as independent contributors to IBP. Importantly, not one of the single measures sufficiently differentiated AS from MLBP[7].

The authors determined that use of 4 criteria would be ideal and derived the following items from their list as most useful in defining IBP:
1. Morning stiffness > 30 minutes duration
2. Improvement in back pain with exercise but not with rest
3. Awakening because of back pain during the second half of the night only; and
4. Alternating buttock pain.

They further determined that the presence of 2 of the 4 items provided a sensitivity of 70.3%, specificity of 81.2%, and a positive likelihood ratio of 3.7.

More recently, the Ankylosing SpondyloArthritis International Society (ASAS) proposed new classification criteria for SpA. It should be noted, however, that these criteria were derived from a set of patients who lacked radiographic confirmation of sacroiliitis and thus, may not be appropriate for the assessment of axial PsA. ASAS clinical criteria included:
1. IBP according to experts
2. Extraspinal manifestations (current or past) including any of: arthritis, enthesitis, uveitis, dactylitis, psoriasis, Crohn's/ulcerative colitis
3. Good response of back pain to a nonsteroidal antiinflammatory drug
4. Erythrocyte sedimentation rate or C-reactive protein level elevated above upper normal limit
5. A positive family history of SpA
6. The presence of HLA-B27.

Two imaging items were also included:
1. Active sacroiliitis on magnetic resonance imaging (MRI; acute inflammatory lesions)
2. Radiographic sacroiliitis on radiographs (at least grade 2 bilateral or grade 3–4 unilateral sacroiliitis).

The presence of sacroiliitis (either on radiographs or MRI) with one other SpA feature or, in the absence of evidence for sacroiliitis, the presence of 3 SpA features, provided a sensitivity of 97.2% and a specificity 94.4% for detecting axial SpA. However, the requirement of IBP in the clinical criteria reduced the sensitivity somewhat to 86%, with the same specificity of 94.4%[8].

The major difficulty with these criteria is that IBP is defined "according to experts," which returns us to the question of how experts define IBP. To address this issue, 13 rheumatologists, all members of ASAS and experts in SpA, each documented the presence or absence of clinical characteristics typical for IBP, and judged whether IBP was considered present or absent based on information received from 20 patients with chronic back pain and suspected axial SpA who were selected for this exercise[9]. Individual IBP items identified by these ASAS experts included:
1. Improvement with exercise (OR 23.1)
2. Pain at night (OR 20.4)
3. Insidious onset (OR 12.7)
4. Age at onset < 40 years (OR 9.9); and
5. No improvement with rest (OR 7.7).

If at least 4 of these 5 items were fulfilled, the criteria had a sensitivity of 77.0% and specificity of 91.7% in the patients participating in the workshop. These criteria were then tested in a group of 648 patients and had sensitivity of 79.6% and specificity of 72.4%. The authors concluded that this expert definition of IBP was robust, easy to apply, and had good face validity, and that these individual IBP items should be used to define IBP in the ASAS classification criteria for axial SpA.

Nonetheless, the expert criteria did not function very well in the validation sample. Moreover, a recent presentation at the European League of Associations of Rheumatology (EULAR 2011) reported that there was low agreement among observers regarding the identification of patients with SpA based on expert opinion, while the European Spondylarthropathy Study Group criteria functioned very well[10]. Another group, from Leiden, presented a poster at EULAR 2011 proposing that removal of the requirement for IBP allows better recognition of early SpA, possibly because of the difficulty with the expert definition of IBP[11]. It should be noted, however, that patients with axial PsA are a subset of patients with SpA; therefore, these criteria may not be applicable because all PsA patients must have psoriasis, and the other clinical features may not be relevant. Chandran, *et al*[12] demonstrated that among patients with axial PsA, there is a reduction in complaints of inflammatory neck and back pain but an increasing limitation of spinal mobility as well as an increase in radiologic changes.

Because it is sometimes difficult to establish with certainty the presence of IBP, particularly in patients with PsA who generally have less pain than patients with rheumatoid arthritis[13] or patients with AS[4], other modalities that identify spinal lesions may be necessary. These include radiographs or MRI findings that can confirm the presence of sacroiliitis or syndesmophytes. MRI identifies lesions in the sacroiliac joints and the spine much earlier than can be detected on radiographs and should be included in the assessment of PsA patients who may have clinical symptoms but negative radiographs[14]. Maksymowych, *et al*[15] described the identification of inflammatory lesions in the spine detected on MRI and their resolution after anti-tumor necrosis factor therapy. The same group also documented that inflammatory lesions on MRI led to the development of syndesmophytes[16]. Thus, MRI may be an important imaging modality to identify PsA patients with inflammatory spinal disease.

In summary, physicians should be able to identify patients with psoriasis who have IBP by asking the 5 items recommended by the ASAS group. Patients who report insidious onset of back pain before age 40 years, the presence of night pain, and improvement with exercise, but not with rest, should be referred to a rheumatologist. Patients with psoriasis who have limited neck or back mobility should also be referred to a rheumatologist to determine whether they have inflammatory spinal disease.

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