TABLE 16. Comparison of the 1990 ACR Classification Criteria and the 2010 ACR Diagnostic Criteria for Fibromyalgia

1990 ACR Classification Criteria	2010 ACR Preliminary Diagnostic Criteria
Widespread pain by self-report	Widespread pain by the Widespread Pain Index (WPI; 19-point scale) assessing the number of regions in which the patient has pain[a,b]
≥11 tender points on digital palpation or using a dolorimeter	Symptom severity by the Symptom Severity (SS) Scale (12-point scale) assessing 1) fatigue; 2) nonrestorative sleep; 3) cognitive symptoms[a,b]
	Duration of symptoms ≥3 months
	No other disorder explaining the pain

ACR = American College of Rheumatology.

[a]Fibromyalgia is diagnosed in the setting of WPI ≥7 plus SS score ≥5, or WPI ≥3 plus SS score ≥9.

[b]The Widespread Pain Index and the Symptom Severity Scale can be viewed at https://www.rheumatology.org/Portals/0/Files/2010%20Fibromyalgia%20Diagnostic%20Criteria_Excerpt.pdf.

Patients should be educated regarding the disease, with validation that the symptoms are real and that the painful areas are not injured and will not lose function. Aerobic exercise can improve well-being and function as well as reduce pain. Because patients initially experience postexercise pain that may threaten their willingness to continue, exercise must be introduced gradually and supported encouragingly. Strength training may also be helpful. Although the evidence base supporting their use is modest, alternative medicine approaches, including yoga, tai chi, acupuncture, and massage, may also help alleviate symptoms.

Patients with fibromyalgia should be assessed for psychosocial stressors and psychiatric illness, including a history of trauma. If present, referral for psychological care is mandatory, because psychic distress may both promote and result from fibromyalgia. Cognitive behavioral therapy has shown modest benefit in reducing pain, negative mood, and disability.

Choice of pharmacologic therapy is based on symptom profile, patient comorbidities, and medication side effects because few trials directly compare the efficacy of medications. Effective pharmacologic therapies target the underlying pathophysiology and inhibit the ascending pain pathways, enhance the descending inhibitory pathways to the dorsal roots, or inhibit release of the pain-promoting neurotransmitter glutamate.

The antiepileptic agents gabapentin and pregabalin (the latter FDA approved) inhibit $\alpha_2\delta$ calcium channels to inhibit glutamate release. They have been shown to improve quality of life and decrease pain.

Tricyclic antidepressants (TCAs) (such as amitriptyline) raise norepinephrine levels and have documented benefit, although efficacy may wane with time. TCAs induce drowsiness, with potential benefit for disordered sleep. The muscle relaxant cyclobenzaprine, another tricyclic, may be useful in patients with muscle spasms. Selective serotonin reuptake inhibitors have little benefit alone but may complement the activity of TCAs.

Among the more effective fibromyalgia therapies are the dual serotonin-norepinephrine reuptake inhibitors (SNRIs), including the FDA-approved agents duloxetine and milnacipran. They or a TCA may be particularly appropriate in the patient with concomitant depression.

Tramadol, which has a complex mechanism of action, has shown some benefit and may be considered as a second-line approach. Finally, in some cases, combination pharmacologic therapy may be helpful.

Evidence does not support the benefit of NSAIDs for fibromyalgia, and pure opioids should not be used.

Fibromyalgia is a chronic disease, and the patient and physician should understand that the benefit of treatment will likely be partial and palliative, rather than complete or curative. Nonetheless, proper treatment can help most patients manage and cope with their symptoms as well as maintain function and autonomy.

KEY POINTS

- The characteristic features of fibromyalgia are widespread chronic pain, fatigue, and sleep disorders, which are frequently accompanied by impaired cognitive function, mood disorders, and symptoms such as headache, gastrointestinal symptoms, and paresthesia.
- The diagnosis of fibromyalgia is no longer based upon physician examination findings but a careful characterization of symptoms using a validated scoring tool. HVC
- Nonpharmacologic therapy (education, exercise, psychosocial support) remains a cornerstone of treatment for fibromyalgia, although pharmacotherapy is often warranted. HVC

Spondyloarthritis

Overview

Spondyloarthritis refers to a group of arthritic disorders that tends to involve the spine and sacroiliac joints and share genetic, pathophysiologic, and clinical features. HLA-B27 is variably expressed but is more frequently present in this group

of patients than in the general population. Peripheral arthritis, enthesitis (inflammation of the insertion points of tendons and ligaments onto bone), inflammatory eye disease, psoriatic rashes, and gastrointestinal and genitourinary inflammation may occur in varying degrees.

Pathophysiology

Pathophysiologic processes involved in these disorders include T-cell activation and proliferation; elaboration of cytokines, particularly tumor necrosis factor (TNF)-α and the interleukins (IL)-1 and -23/17; and bony proliferation and destruction. Although the exact trigger for these processes is unknown, genetic and environmental factors are likely to play a role.

Genetic Factors

The most important genetic risk factor for spondyloarthritis is the presence of HLA-B27. The prevalence of HLA-B27 is high among Northern Europeans (about 6%) and low in Africans; accordingly, spondyloarthritis is seen with greater frequency in the former group. However, only 5% to 6% of those carrying HLA-B27 develop spondyloarthritis, and not all patients with spondyloarthritis are positive for HLA-B27. For these reasons, HLA-B27 should not be used as a screening test for these disorders, although its presence in a patient with a high pretest probability can support the diagnosis.

Several theories have been advanced to explain the relationship between HLA-B27 and the spectrum of disease observed. The arthritogenic peptide theory suggests that the presentation of an unknown peptide(s), perhaps of bacterial origin, activates cytotoxic T lymphocytes in the context of HLA-B27. Other theories propose that HLA-B27 molecules on antigen-presenting cells can either directly activate natural killer and T cells even in the absence of antigen or can induce a proinflammatory environment. Similarly, HLA-B27 expression on intestinal epithelium may interact with the gut microbiome to favor inflammation. Finally, tissue-specific chronic inflammation triggered by bacterial or mechanical stress may underlie a more autoinflammatory rather than autoimmune role for HLA-B27.

Other genes that have been identified as risk factors for spondyloarthritis include those associated with the TNF receptor signaling pathway as well as IL-1α and IL-23 receptor polymorphisms.

Environmental Factors

Considerable interest has focused on the role of the microbiome, particularly because gut inflammation is prevalent in many forms of spondyloarthritis. It is hypothesized that microbe-associated intestinal inflammation could cause loss of integrity of the bowel epithelium, permitting macrophage stimulation, increases in IL-23, and Th17 cell activation. However, specific causative pathogen exposure has not been identified except in some cases of reactive arthritis.

KEY POINTS

- Spondyloarthritis refers to a group of arthritic disorders that tends to involve the spine and sacroiliac joints and share genetic, pathophysiologic, and clinical features.
- The most important genetic risk factor for spondyloarthritis is the presence of HLA-B27; however, only 5% to 6% of patients carrying HLA-B27 develop spondyloarthritis, and not all patients with spondyloarthritis are positive for HLA-B27.

Classification

Spondyloarthritis is divided into five categories based on the predominant clinical features, although overlap of clinical features among these categories is common (**Table 17**):

1. Ankylosing spondylitis: Spinal involvement is the defining feature.
2. Psoriatic arthritis: Psoriasis co-occurs with spinal and/or peripheral arthritis.
3. Inflammatory bowel disease–associated arthritis: Clinically apparent intestinal inflammation is present along with spinal and/or peripheral arthritis.
4. Reactive arthritis: Inflammatory synovitis (primarily peripheral) occurs following specific gastrointestinal or genitourinary infections.
5. Undifferentiated spondyloarthritis: Spondylitis occurs in the absence of diagnostic features (including radiographic changes) that would permit diagnosis of one of the other categories of disease.

Clinical features common to all forms of spondyloarthritis are back pain, enthesitis, and dactylitis. Back pain is often the presenting symptom for spondyloarthritis, although spondyloarthritis only accounts for about 5% of chronic low back pain. Unlike most forms of back pain, the pain in spondyloarthritis is inflammatory and typically occurs in patients under the age of 40 years. It is characterized by an insidious onset, duration of more than 3 months, presence at rest and at night (waking the patient), morning stiffness lasting more than 30 minutes, and improvement with exercise. Enthesitis, or inflammation at the site where a ligament or tendon attaches to bone, presents as pain and tenderness in areas such as the Achilles tendon (**Figure 10**). Dactylitis ("sausage digits") is a diffuse fusiform swelling of the fingers or toes, consistent with tendon and ligament involvement beyond the points of insertion (**Figure 11**).

Although the categories listed here are extremely helpful in identifying and diagnosing disease, recently developed classification criteria emphasize the commonalities rather than the differences among the various forms of spondyloarthritis (for example, Assessment of SpondyloArthritis international Society [ASAS] criteria for peripheral and axial disease). Such criteria may permit diagnosis and treatment at an earlier stage

TABLE 17. Clinical Features of Spondyloarthritis

	Ankylosing Spondylitis	Psoriatic Arthritis	IBD-Associated Arthritis	Reactive Arthritis
Musculoskeletal				
Axial involvement	Axial involvement predominates; initially symmetrically involves the SI joints and lower spine, progressing cranially; does not skip regions	May occur at any level; may start in the cervical spine; may skip regions	May be asymptomatic but can follow a course similar to ankylosing spondylitis; SI involvement often asymmetric; axial arthritis does not parallel IBD activity	Less common than in other forms of spondyloarthritis
Peripheral involvement	Enthesitis; may have asymmetric large-joint oligoarthritis, including hips and shoulders; hip involvement can cause significant functional limitation; dactylitis uncommon	Five subtypes (symmetric polyarthritis; asymmetric oligoarthritis; DIP-predominant; spondyloarthritis; arthritis mutilans); also, enthesitis, dactylitis, and tenosynovitis	Acute polyarticular peripheral arthritis: especially knee; early; can parallel IBD activity Chronic polyarticular peripheral arthritis: of PIPs, MCPs, wrists, elbows, shoulders, knees, ankles, and MTPs; does not parallel IBD; dactylitis; enthesitis	Enthesitis and asymmetric large-joint oligoarthritis; usually self-limited; nonerosive; some patients experience recurrent or persistent arthritis; may develop features of other forms of spondyloarthritis
Dermatologic	Skin findings not characteristic, but psoriatic-like lesions may occasionally occur	Psoriasis typically precedes joint involvement; nail pitting; onychodystrophy	Pyoderma gangrenosum; erythema nodosum	Keratoderma blennorrhagicum (psoriasiform rash on soles, toes, palms); circinate balanitis (psoriasiform rash on penis)
Ophthalmologic	Anterior uveitis (unilateral, recurrent)	Conjunctivitis more common than anterior uveitis (can be bilateral, insidious, or chronic)	Anterior uveitis (can be bilateral, insidious, or chronic); conjunctivitis, keratitis, and episcleritis are rare	Conjunctivitis more common than anterior uveitis
Gastrointestinal	Asymptomatic intestinal ulcerations (rare)	—	Crohn disease; ulcerative colitis	Prior GI infection in some patients
Genitourinary	Urethritis (rare)	—	Nephrolithiasis	Prior GU infection in some patients; sterile urethritis; prostatitis; cervicitis; salpingitis
Cardiovascular	Aortic valve disease; aortitis; conduction abnormalities; CAD	Association with traditional CAD risk factors	Thromboembolism	—
Pulmonary	Restrictive lung disease from costovertebral rigidity; apical fibrosis (rare)	—	—	—
Bone quality	Falsely elevated bone mineral density from syndesmophytes; increased risk of spine fracture	Increased risk of fracture (multifactorial)	High risk for vitamin D deficiency, low bone density, and fracture	Localized osteopenia

CAD = coronary artery disease; DIP = distal interphalangeal; GI = gastrointestinal; GU = genitourinary; IBD = inflammatory bowel disease; MCP = metacarpophalangeal; MTP = metatarsophalangeal; PIP = proximal interphalangeal; SI = sacroiliac.

of disease before the unique features of the condition become well defined.

Ankylosing Spondylitis

Ankylosing spondylitis is a chronic inflammatory disease affecting the axial skeleton, entheses, and peripheral joints. In contrast to other forms of spondyloarthritis, sacroiliac joint involvement is considered an essential feature of ankylosing spondylitis. Ankylosing spondylitis has a strong familial predilection and the strongest association with HLA-B27 among the forms of spondyloarthritis, being present in up to 95% of patients. Although a male predominance of 2-3:1 has been described, women usually have milder and underappreciated disease; prevalence may actually be similar between genders. Disease can begin as early as adolescence, but peak age of diagnosis is between 20 and 30 years.

Symptoms of inflammatory back pain are most frequently the presenting complaint. Spinal involvement begins in the lumbar region and tends to ascend. Buttock pain may indicate sacroiliac joint involvement, which is characteristically bilateral. About one third of patients develop hip joint involvement and about one third develop peripheral arthritis elsewhere, often in the shoulders. Enthesitis most often manifests as Achilles tendinitis. Dactylitis occurs in fewer than 10% of patients.

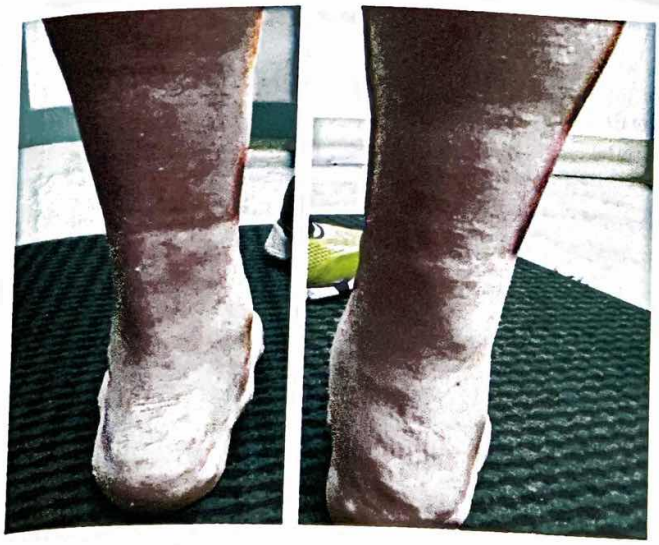

FIGURE 10. Marked thickening of the distal right Achilles tendon and Achilles insertion on the calcaneus as the result of chronic Achilles tendinitis in a patient with psoriatic arthritis (normal contralateral Achilles insertion).

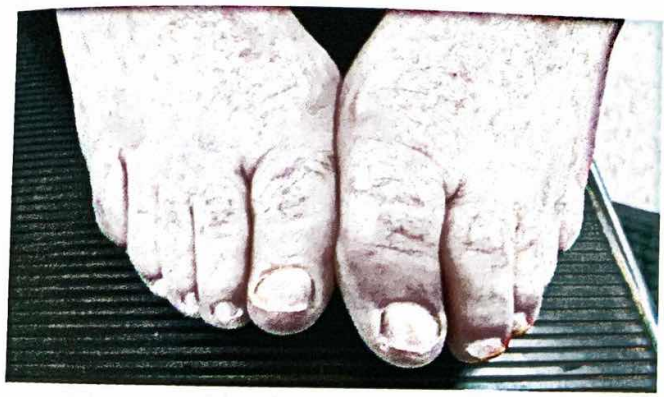

FIGURE 11. Diffuse swelling of the first and second toes of the left foot due to dactylitis in a patient with psoriatic arthritis resulting in a "sausage digit" appearance.

Physical examination, particularly in more advanced disease, can be highly characteristic. With active inflammation, tenderness over the sacroiliac joints is often the first sign of disease. Over time, marked reduction in spinal mobility can occur in all planes, and chest expansion becomes reduced. Flexion deformity at the neck and thoracic hyperkyphosis may lead to a hunched posture. A loss of lumbar lordosis and restricted range of motion in the hips may also be evident.

H Extra-articular manifestations of ankylosing spondylitis are not uncommon (see Table 17). Cardiac and pulmonary manifestations, including aortic valve disease, cardiac conduction abnormalities, and restrictive lung disease, are more common in ankylosing spondylitis than other forms of spondyloarthritis. In addition, vertebral compression fractures may occur with little to no trauma as the disease progresses. The cervical spine is the most common site for fractures and can be associated with neurologic complications. H

The course of ankylosing spondylitis is variable; progression may occur over many years. Markers of a poorer prognosis include a longer duration of disease, the presence of hip joint involvement, elevation of inflammatory markers, and the presence of radiographic changes in the spine. Mortality is increased in men and correlates with disease activity.

Psoriatic Arthritis

Psoriatic arthritis is an inflammatory joint disease associated with psoriasis. Estimates of the frequency of psoriatic arthritis among patients with psoriasis vary from 7% to 42%. Men and women are equally affected, and the usual age of onset is between 30 to 50 years. Psoriasis precedes or co-occurs with arthritis symptoms in about 90% of patients with psoriatic arthritis; less commonly, the rash may follow the arthritis, with a latency period as long as a decade. Skin involvement may be subtle, involving only areas such as the umbilicus, perineum, or gluteal cleft. There is no correlation between the extent of skin involvement and the severity of joint symptoms. In addition to skin lesions, nail pitting and onychodystrophy are seen; nail involvement is a risk factor for developing joint disease, particularly of the distal interphalangeal joints (**Figure 12**).

Five clinical subtypes of psoriatic arthritis, which may overlap, are recognized as follows: symmetric polyarthritis; asymmetric oligoarthritis; distal interphalangeal-predominant disease; spondyloarthritis; and arthritis mutilans. Arthritis mutilans represents the rare end stage of progressive, destructive arthritis in the small joints of the hands. It results in subluxation, ligamentous laxity, and telescope-like retraction of the fingers. Additional joints usually become involved over time.

Enthesitis, tenosynovitis, and dactylitis often occur. Common locations for enthesitis include the Achilles tendon (see Figure 10), the calcaneal insertion of the plantar fascia, and ligamentous insertions into the pelvic bones. Dactylitis typically involves one or two digits; the feet are more commonly affected than the hands (see Figure 11).

Symptomatic and radiographic spine involvement is unusual at disease onset but increased over long-term follow-up,

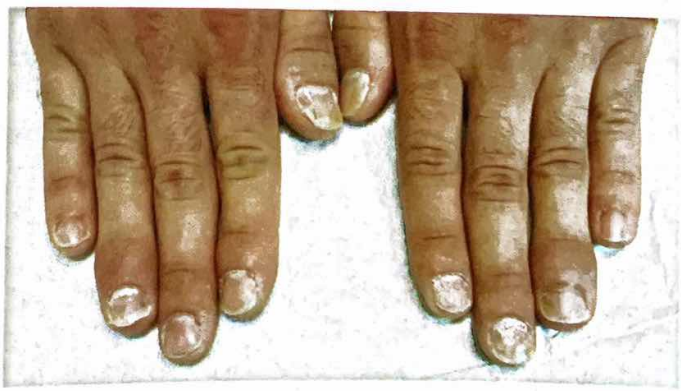

FIGURE 12. Dystrophic nail changes, including onycholysis and pitting, and inflammatory arthritic changes in the distal interphalangeal joints in a patient with psoriasis and psoriatic arthritis.

particularly in the cervical spine. The presence of sacroiliitis is associated with an increased likelihood for HLA-B27 positivity. In contrast to the almost universally bilateral sacroiliitis of ankylosing spondylitis, sacroiliitis is not always present in psoriatic arthritis and is more likely to be unilateral. Extra-articular manifestations are listed in Table 17.

Poor prognostic factors in psoriatic arthritis include the presence of polyarticular or erosive disease at the time of diagnosis. Patients additionally have an increased risk for cardiovascular disease.

Inflammatory Bowel Disease-Associated Arthritis

Inflammatory bowel disease (IBD), including Crohn disease and ulcerative colitis, may be associated with inflammatory arthritis in 6% to 46% of patients. Onset of arthritis may occur at any time in the course of the bowel disease.

IBD-associated arthritis occurs in three patterns:

1. Sacroiliitis/spondylitis: occurs in up to 26% of patients; 50% to 75% are positive for HLA-B27; men are more frequently affected than women; radiographic abnormalities of the sacroiliac joints may be seen in the absence of symptoms.
2. Acute polyarticular peripheral arthritis: self-limited; affects 5% of patients and occurs early in the course of IBD; the presence of arthritis is not as highly associated with HLA-B27 as in axial disease; the knee is most frequently involved; flares of joint symptoms may parallel exacerbations of bowel disease, but 90% resolve within 6 months.
3. Chronic polyarticular peripheral arthritis: affects less than 5% of patients; men and women are equally affected; the presence of arthritis is not as highly associated with HLA-B27 as in axial disease; the metacarpophalangeal joints, knees, ankles, elbows, shoulders, wrists, proximal interphalangeal, and metatarsophalangeal joints may be affected; flares of arthritis may recur repeatedly over years and last for months, but joint symptoms are unrelated to bowel disease activity.

See Table 17 for information on extra-articular manifestations.

Reactive Arthritis

Reactive arthritis is a rare cause of inflammatory arthritis that can occur following specific genitourinary and gastrointestinal infections, including *Chlamydia trachomatis* and *Ureaplasma urealyticum* in the urethra and *Campylobacter, Escherichia coli, Salmonella, Shigella,* and *Yersinia* in the intestine. Reactive arthritis occurs following 2% to 33% of cases of bacterial dysentery, with a higher incidence reported after single source outbreaks. About 90% of *Yersinia*-related cases occur in patients who are HLA-B27 positive, whereas only 30% to 50% of patients with reactive arthritis associated with other infectious agents are HLA-B27 positive.

Symptoms of inflammatory arthritis typically appear 2 to 3 weeks postinfection. Arthritis is asymmetric and may be monoarticular or oligoarticular; joints commonly affected include the knee, ankle, and wrist. Enthesitis is especially common; Achilles tendinitis and plantar fasciitis occur in up to 90% of cases. Dactylitis can also occur. The spine and sacroiliac joints are less commonly involved. In about half of patients, symptoms self-resolve within 6 months; most other cases self-resolve within 1 year, with a small proportion of cases converting to chronic disease. Extra-articular manifestations are described in Table 17. A subset of patients may demonstrate the "complete triad" of conjunctivitis, arthritis, and urethritis.

KEY POINTS

- Ankylosing spondylitis is a chronic inflammatory disease affecting the axial skeleton (including sacroiliac joints), entheses, and peripheral joints; HLA-B27 is present in up to 95% of patients.
- Psoriatic arthritis is an inflammatory joint disease associated with psoriasis, multiple possible joint patterns, enthesitis, tenosynovitis, and dactylitis.
- Inflammatory bowel disease–associated arthritis occurs in three patterns: sacroiliitis/spondylitis, acute polyarticular peripheral arthritis, and chronic polyarticular peripheral arthritis; only the acute polyarticular form is related to flares of bowel disease.
- Reactive arthritis can occur 2 to 3 weeks following specific gastrointestinal and genitourinary infections; an asymmetric monoarticular or oligoarticular arthritis, dactylitis, and enthesitis can occur.

Diagnosis

Laboratory Studies

Spondyloarthritis is considered seronegative because rheumatoid factor and other autoantibodies are typically absent. HLA-B27 is present in many patients, particularly those with ankylosing spondylitis and spinal involvement; however, it cannot independently confirm or exclude a diagnosis. With active disease, evidence of systemic inflammation may be diagnostically helpful, including elevations of erythrocyte sedimentation rate and C-reactive protein as well as normochromic, normocytic anemia. Each of these findings, however, is nonspecific and may be normal even in the presence of active disease. Several other laboratory findings are suggestive of the underlying disorder but are of limited utility diagnostically. Elevated IgA levels have been reported in patients with ankylosing spondylitis and psoriatic arthritis, consistent with increased mucosal immune activity. Serum alkaline phosphatase may be elevated in ankylosing spondylitis. Serum urate levels may be high in psoriatic arthritis, and these patients are at increased risk for co-occurrence of gout. Synovial fluid may show an elevated leukocyte count with a predominance of neutrophils.

In cases of suspected reactive arthritis, stool and urine cultures, genital swabs, nucleic acid amplification testing, and

rising serum antibody titers against the suspected causative organism can be helpful in establishing the diagnosis. Pathogens can generally not be cultured from joint fluid in these patients, and antecedent infection is verified in less than half of affected individuals.

Imaging Studies

Radiography of the sacroiliac joints is an essential part of the initial evaluation of patients being assessed for spondyloarthritis but may be normal early in the course of disease. Radiographic evidence of sacroiliitis includes pseudo-widening of the joints, erosions, sclerosis, and ankylosis. In the spine, bony proliferation between vertebral bodies can result in formation of syndesmophytes (bony bridges) that can lead to a "bamboo spine" appearance in 10% to 15% of affected patients with ankylosing spondylitis (**Figure 13**). Other changes in the spine include vertebral squaring, disk calcification, and vertebral and facet joint ankylosis. In psoriatic arthritis, the syndesmophytes are often described as less delicate, more "chunky," patchy, and asymmetric compared with those associated with ankylosing spondylitis.

Plain radiography of peripheral joints may aid in the diagnosis of spondyloarthritis, particularly when erosive and proliferative changes are present concurrently. Bony proliferative changes at entheseal sites may be seen in any spondyloarthritis. Features particularly characteristic of psoriatic arthritis include asymmetric distribution, distal interphalangeal joint involvement, osteolysis leading to pencil-in-cup deformity (**Figure 14**), and proliferative new bone formation along the shaft of metacarpal or metatarsal bones. There are no characteristic findings of reactive arthritis on plain radiographs.

Although plain radiography remains the cornerstone of radiographic diagnosis in spondyloarthritis, MRI is increasingly recognized as a useful diagnostic and prognostic modality. MRI is more sensitive for detecting early spine and sacroiliac joint inflammation and may be indicated in the evaluation of suspected spondyloarthritis if plain radiographs are negative. MRI can also detect inflammatory changes even in the absence of bony lesions. For example, the presence of bone marrow edema, although nonspecific, can suggest active inflammation in the sacroiliac joints. MRI can also detect soft-tissue abnormalities (such as bursitis and enthesitis), erosions, sclerosis, and ankylosis.

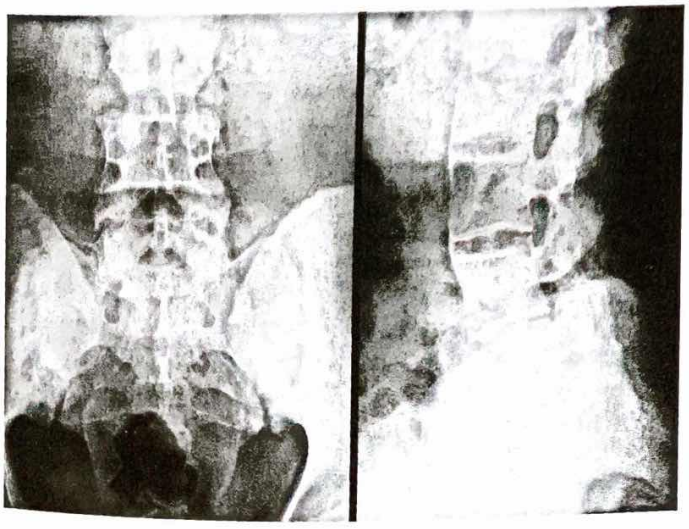

FIGURE 13. Spinal features of ankylosing spondylitis. *Left,* Sacroiliac erosive disease, characterized by areas of joint-space narrowing in some locations, apparent relative widening in others, and secondary bony sclerosis. Although the left sacroiliac joint is more severely involved, both sides are affected. *Right,* Delicate (gracile) syndesmophytes bridging lumbar vertebral bodies, leading to a "bamboo spine" appearance. Note that the syndesmophytes are "flowing" (contiguous without skipping any vertebral joints).

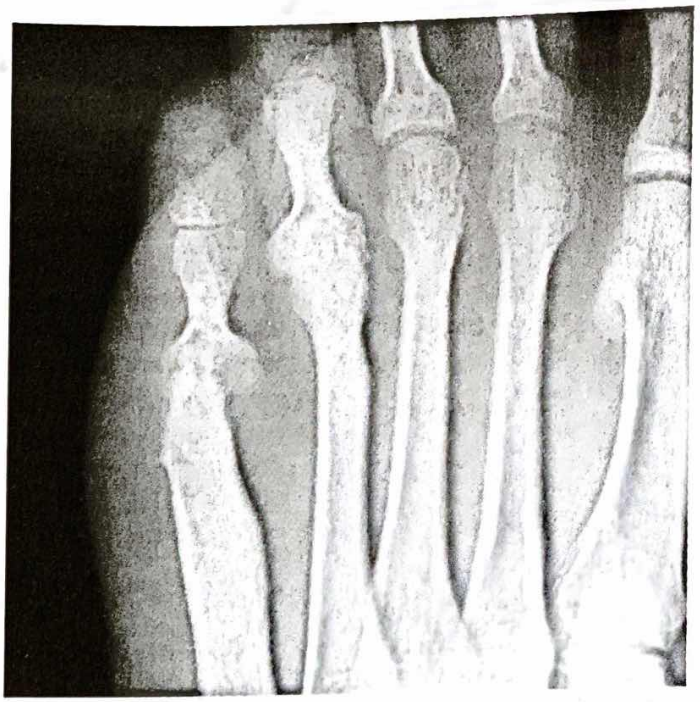

FIGURE 14. Radiograph showing pencil-in-cup deformity of the fifth metatarsal joint and ankylosis of the fourth metatarsal joint in a patient with psoriatic arthritis.

In older patients, the diagnostic specificity of radiographic evaluation for spondyloarthritis may decline. Other conditions such as osteitis condensans ilii, osteoarthritis, degenerative disk disease, and diffuse idiopathic skeletal hyperostosis (DISH) may cause sclerotic changes of the sacroiliac joints and osteophytes that may be difficult to distinguish from the syndesmophytes of ankylosing spondylitis. In particular, DISH typically causes multilevel bridging osteophytes. In ankylosing spondylitis, however, the bony bridges tend to be thinner and more vertically oriented than those seen in DISH.

KEY POINTS

- In patients with spondyloarthritis, rheumatoid factor and other autoantibodies are typically absent; HLA-B27 is positive in many patients, but it cannot independently confirm or exclude a diagnosis.
- Markers of systemic inflammation such as erythrocyte sedimentation rate and C-reactive protein may be normal even in the presence of active spondyloarthritis.

(Continued)

KEY POINTS (continued)

- Radiography of the sacroiliac joints is essential in patients with suspected spondyloarthritis; radiographic evidence of sacroiliitis includes pseudo-widening of the joints, erosions, sclerosis, and ankylosis.
- HVC MRI is more sensitive for detecting early spine and sacroiliac joint inflammation and may be indicated in the evaluation of suspected spondyloarthritis if plain radiographs are negative.
- Radiographic changes in psoriatic arthritis can include asymmetric distribution, distal interphalangeal joint involvement, osteolysis leading to a pencil-in-cup deformity, and proliferative new bone formation along the shaft of metacarpal or metatarsal bones.

Management

General Considerations

Management goals in spondyloarthritis are to control pain and inflammation, preserve function, and prevent progressive structural damage, including spine and joint ankyloses (fusion). Patient education regarding the course, treatment, and prognosis of disease, as well as the importance of general health, avoiding smoking, and participating in regular exercise are critical components of the overall treatment program.

Ankylosing Spondylitis

NSAIDs are recommended as first-line treatment in ankylosing spondylitis and remain important in management throughout the course of disease. Patients with ankylosing spondylitis are more likely to respond to NSAIDs and to do so more rapidly and completely than patients with chronic low back pain from other causes. Several studies suggest that, in contrast to most forms of arthritis, continuous use of NSAIDs may help slow disease progression in ankylosing spondylitis. Oral glucocorticoids are not recommended, but intra-articular glucocorticoid injections, including in the sacroiliac joints, can help alleviate pain. Nonbiologic disease-modifying antirheumatic drugs (DMARDs) such as methotrexate have no efficacy in axial disease and limited efficacy in peripheral disease.

In patients with persistent symptoms on NSAID therapy, TNF-α inhibitors have efficacy in reducing signs and symptoms of ankylosing spondylitis, with about half of those treated improving by 50%. Whether TNF-α inhibitors can slow radiographic progression in ankylosing spondylitis remains an area of ongoing investigation. These agents are also effective in treating ankylosing spondylitis–associated anterior uveitis.

Physical therapy is the most important nonpharmacologic intervention in ankylosing spondylitis. The goals of therapy include improving pain and stiffness, maintaining range of motion, and reducing disability; transition to an ongoing daily exercise program is optimal.

Total hip arthroplasty can be highly effective in reducing pain and restoring function in the management of progressive hip involvement and may be indicated at an earlier age than in patients with osteoarthritis.

Psoriatic Arthritis

Treatment choices in psoriatic arthritis take into account the extent of both skin and joint involvement. NSAIDs may be effective for mild joint disease. Methotrexate is the most commonly used DMARD for psoriatic arthritis. Although benefit can be demonstrated in control of skin disease and joint pain, methotrexate has not been shown to reduce progression of joint damage. Sulfasalazine and leflunomide can also improve joint symptoms. Apremilast is modestly effective for psoriasis and psoriatic arthritis.

In more severe psoriatic arthritis, TNF-α inhibitors have been shown to have superior efficacy in the management of joint symptoms and to slow the progression of radiographic damage, including joint-space narrowing and erosions.

The biologic agents ustekinumab (anti-IL-12/23 antibody) and secukinumab (anti-IL-17A antibody) have also been approved for treating both psoriasis and psoriatic arthritis, and can improve dactylitis and enthesitis.

Inflammatory Bowel Disease-Associated Arthritis

Various pharmacologic agents may be useful in the treatment of both intestinal and peripheral arthritis related to Crohn disease and ulcerative colitis, including sulfasalazine, azathioprine, 6-mercaptopurine, methotrexate, glucocorticoids, and the TNF-α inhibitors infliximab and adalimumab. NSAIDs can provide symptomatic relief of arthritis symptoms but may occasionally exacerbate IBD.

Reactive Arthritis

Treatment of the antecedent infection is indicated in patients with reactive arthritis who have an identifiable cause. However, most patients present postinfection, and antibiotics are not usually effective in treating the arthritis. Most patients have self-limited disease, and short-term use of daily NSAIDs often improves symptoms until the condition resolves. If relief is incomplete, intra-articular glucocorticoid injections and oral glucocorticoids can be used. If symptoms persist beyond 3 to 6 months, the use of DMARDs such as sulfasalazine, methotrexate, or TNF-α inhibitors may be necessary for symptom control and to prevent joint erosion. Therapy is discontinued 3 to 6 months following disease remission.

KEY POINTS

- In ankylosing spondylitis, NSAIDs are recommended as first-line treatment and may help slow disease progression; physical therapy is the most important nonpharmacologic intervention. HVC

(Continued)

KEY POINTS *(continued)*

- In more severe psoriatic arthritis, tumor necrosis factor α inhibitors have been shown to have superior efficacy in the management of joint symptoms and to slow the progression of radiographic damage.
- Treatment options for both intestinal and peripheral arthritis related to Crohn disease and ulcerative colitis include sulfasalazine, azathioprine, 6-mercaptopurine, methotrexate, glucocorticoids, infliximab, and adalimumab.
- Antibiotics are not usually effective in treating reactive arthritis, but short-term NSAIDs can be used to improve symptoms in this typically self-limited disease.

HVC