

Identifying Inflammatory Arthritis



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Although musculoskeletal complaints are common, the early and accurate diagnosis of rheumatic diseases poses a significant challenge.¹ Early diagnosis and treatment of rheumatic disease, in particular inflammatory arthritis, results in improved short- and long-term outcomes for the patient.^{2,3} This group of disorders frequently affects patients during their most productive years, and is the most common cause of long-term disability in Canada.^{4,6} Therefore, the ability to correctly identify such patients is critical.

What should I do if I suspect inflammatory arthritis?

1. Take a medical history

The first step is to determine whether the symptoms are articular or non-articular in nature. Complaints that are confined to articular structures are likely to represent a primary articular process. Conversely, patients presenting with pain affecting both articular and non-articular structures may have a generalized pain syndrome, such as fibromyalgia or regional pain syndrome.

Articular symptoms may be categorized as inflammatory or degenerative (Table 1). Inflammatory arthropathies can affect all ages and are more common in women, whereas, degenerative arthritis tends to affect older age groups and both sexes equally.

Inflammatory arthritis is typically worse in the morning and following inactivity, and gradually improves when the patient mobilizes. Conversely, degenerative arthritis is typically better in the morning

Jenna's Joints

- Jenna, 37, develops pain and swelling of the small joints of her hands and feet, as well as of the left knee over three months.
- The pain is worse upon first waking in the morning, and is associated with three hours of musculoskeletal stiffness. Her symptoms improve with movement and as the day progresses; however, she is having difficulty sleeping at night due to joint discomfort.
- Jenna is experiencing profound fatigue, is requiring more help from her partner with housework and has missed several days of work in the last month due to joint symptoms.
- Her general physical examination is normal.
- Her musculoskeletal examination reveals tenderness and fluctuant swelling of the metacarpophalangeal joints of both hands, the metatarsophalangeal joints of both feet and the left knee. The range of motion in these joints is reduced.



For more on Jenna, go to page 97.

and following a period of rest, and is aggravated by use of the joint. Prolonged joint stiffness of longer than 45 minutes is a frequent manifestation of inflammatory arthritis.

The pattern of joint involvement may provide helpful clues for the diagnosis. An additive pattern, indicating progressive involvement of affected joints, is the most common and is seen in patients with rheumatoid arthritis (RA). Less common is the inter-

Table 1
Medical history

Variable	Inflammatory arthritis	Degenerative arthritis	Fibromyalgia
Age	All ages	Older age groups	All ages
Sex	F > M	F = M	F > M
Joint pain	Present	Present	Present
Joint stiffness	> 45 minutes	< 45 minutes	Persistent
Aggravating factors	Rest	Activity	Activity, stress, humidity, cold
Relieving factors	Activity	Rest	None
Number of joints involved	Monoarticular, polyarticular	Monoarticular, oligoarticular	Polyarticular
Joint distribution			
• Peripheral	Symmetric, small joints	Asymmetric, large joints	No specific distribution
• Axial	Present	Present	Often present
History of joint trauma	Absent	Sometimes present	Absent
Extra-articular features	Sometimes present	Absent	Absent

F: Female
M: Male

mittent pattern, where symptoms completely resolve between episodes, and this may occur in the early stages of gout and systemic lupus erythematosus (SLE). Finally, a migratory pattern, in which the symptoms move from one articulation to another, occurs in rheumatic fever and in the arthritis associated with disseminated gonococcal infection.

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The duration of symptoms is important when distinguishing between transient and chronic forms of inflammatory arthropathies. By definition, joint inflammation must be present for at least six weeks to be considered chronic, such as in RA or psoriatic arthritis. A shorter duration may indicate either a reversible or curable condition such as gout, pseudo-gout or infection, or may be attributable to a transient viral infection, a frequent cause of short-lived joint pain or inflammation.

Finally, abnormalities in non-articular structures may help to identify the cause of an inflammatory arthropathy (Table 2). Skin rashes include the malar (butterfly) rash of SLE, psoriasis in psoriatic arthritis or ulcerating skin lesions in systemic vasculitis. The nail changes of psoriasis are more common in patients with psoriatic arthritis.

Oral ulcers may be associated with SLE or some of the seronegative arthropathies. Subcutaneous nodules may represent rheumatoid nodules or gouty tophi. Excessive and persistent dry eyes (xerophthalmia) and dry mouth

Table 2

Extra-articular features in inflammatory arthritis

- Skin rashes, nail changes, mucous membrane ulcers
- Subcutaneous nodules
- Ocular dryness and inflammation
- Serositis
- Raynaud's phenomenon
- Diarrhea and abdominal pain
- Fatigue, weight loss, fever

(xerostomia) suggest Sjogren's syndrome, which may be primary or secondary to a connective tissue disease. Ocular inflammation may occur in rheumatoid arthritis (scleritis and episcleritis) or the seronegative arthropathies (iritis or uveitis). Serositis, causing pleural or pericardial effusions, occurs in patients with RA or SLE. Diarrhea with abdominal cramps and weight loss raises the possibility of inflammatory bowel disease.

Finally, constitutional symptoms, such as fatigue, weight loss and fever are highly suggestive of a systemic inflammatory process. Although patients with fibromyalgia may also describe profound fatigue and musculoskeletal morning stiffness, they will lack objective evidence of joint inflammation.

2. Perform a physical examination

A thorough physical examination is the next step (Table 3). Indicators of inflammation include joint tenderness and fluctuant joint swelling. Joint tenderness may be elicited by either applying pressure directly over the joint line (joint line tenderness) or by moving the joint to the end of its range of motion and applying additional force (stress pain).

Fluctuant joint swelling may be caused by either fluid in the joint or proliferation of the synovial membrane. It is the most convincing evidence for joint inflammation and may be associated with increased

Helping Jenna

- Jenna has a history and physical findings in keeping with inflammatory arthritis:
 - Young female with musculoskeletal complaints > six weeks
 - History of prolonged musculoskeletal morning stiffness
 - Typical aggravating and relieving factors
 - Systemic features (e.g., fatigue)
- The location of articular features suggests a diagnosis of rheumatoid arthritis:
 - Symmetric joint involvement
 - Small joints of hands and feet affected
- The appropriate next steps include:
 - Order laboratory tests (complete blood cell count, erythrocyte sedimentation rate, C-reactive protein, rheumatoid factor and antinuclear antibody)
 - Consult a rheumatologist

temperature, particularly in larger joints, such as the elbow, wrist, knee and ankle. There may also be associated erythema in acute inflammatory conditions, such as gout or septic arthritis; however, this is unusual in chronic inflammatory arthropathies. Range of motion

Table 3

Physical examination

Variable	Inflammatory arthritis	Degenerative arthritis	Fibromyalgia
Joint tenderness	++	+	++ (= bony tenderness)
Joint swelling (soft)	++	+	-
Joint swelling (hard)	-	+	-
Reduced range of motion	++	+	-
Joint distribution	+	+	-
Extra-articular features	++	-	-
Soft tissue tenderness	-	-	++

+: Present
-: Absent

Inflammatory Arthritis

in all axes of movement will usually be restricted. Finally, the presence of extra-articular features is exclusive to the inflammatory arthropathies.

Patients with degenerative arthritis, particularly in the early stages, tend to have less marked joint tenderness. Swelling may be present, but is usually bony hard on palpation, reflecting osteophytes at the joint margins. In the early stages, the range of motion is usually better preserved than in comparable stages of inflammatory arthritis.

The distribution of joint involvement may also be helpful. For example, RA is often symmetric, and frequently affects the small joint of the hands with the exception of the distal interphalangeal (DIP) joints. In contrast, psoriatic arthritis is usually asymmetric and often affects the DIPs. Psoriatic arthritis and some of the other seronegative spondyloarthropathies frequently cause involvement of the spine. The typical distribution of primary osteoarthritis includes the distal interphalangeal and proximal interphalangeal joints of the hands, the first carpometacarpal joints (base of the thumb), the base of the cervical and lumbar spine as well as the hips, knees and

Rheumatoid factor is found in up to 80% of patients with established RA, however, the prevalence may be as low as 30% in the first three months of disease.

first metatarsophalangeal joints of the feet.

Patients with regional pain syndromes or fibromyalgia will frequently have soft tissue tenderness in one or several anatomical areas. If joint tenderness is present, it will usually be comparable to tenderness over adjacent bony control sites. However, if there is objective evidence of joint inflammation, an alternative or concurrent diagnosis must be sought.

Table 4
Laboratory investigations

Variable	Inflammatory arthritis	Degenerative arthritis	Fibromyalgia
Anemia	+	-	-
Thrombocytosis	+	-	-
Elevated ESR	+	+/-	-
Elevated CRP	+	-	-
Rheumatoid factor	+/-	-	-
ANA	+/-	-	-
Synovial fluid analysis	+	-	-

ESR: Erythrocyte sedimentation rate +:Present
CRP: C-reactive protein -:Absent
ANA: Antinuclear antibody

3. Investigate

The selected use of laboratory tests may be helpful to support the clinical diagnosis (Table 4). The most common laboratory markers of systemic inflammation include anemia (unless otherwise explained), thrombocytosis, elevated erythrocyte sedimentation rate (ESR) and elevated C-reactive protein (CRP). Rheumatoid factor is found in up to 80% of patients with established RA, however, the prevalence may be as low as 30% in the first three months of disease. Antinuclear antibodies are present in a variety of autoimmune rheumatic diseases and further investigation will be required to determine the antibody specificity. Synovial fluid analysis is helpful to confirm the presence of acute gout, pseudogout, septic arthritis or hemarthrosis. Genetic testing, such as HLA-B27, should not be used as a diagnostic test in patients with musculoskeletal complaints.

Conventional radiographs of symptomatic joints are often normal in the early stages of both inflammatory and degenerative arthritis. Over time, most patients develop radiographic changes that help to confirm the diagnosis and to monitor disease progression. In general, inflammatory arthritis can cause periarticular osteopenia, symmetric loss of joint space, bony erosions, and progressive deformity. Degenerative arthritis causes asymmetric joint space loss, subchondral bone cysts and sclerosis, and marginal osteophytes. More sophisticated

techniques such as bone scanning, CT scanning and MRI may be useful in some cases, but should be considered in consultation with an appropriate specialist.

Concluding thoughts...

The early and accurate diagnosis of musculoskeletal disorders is made largely on the basis of a thorough history and physical examination with judicious use of selected laboratory investigations. The patient described earlier has both a history and physical findings consistent with inflammatory arthritis (likely RA). Specifically, Jenna is a young woman with more than six weeks of joint pain and prolonged musculoskeletal morning stiffness with typical aggravating and relieving factors. Profound fatigue supports a systemic inflammatory process, and the symmetric involvement of the small joints of the hands and feet is an additional clue to the probable diagnosis of RA.

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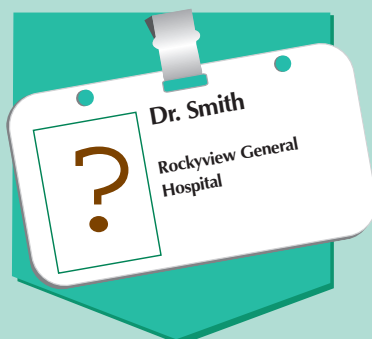
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Take-home message



- The diagnosis of inflammatory arthritis should be considered:
 - in young individuals with multiple joint involvement,
 - in those with a history of prolonged musculoskeletal morning stiffness,
 - in those with symmetric small joint swelling that is fluctuant on palpation and
 - in the presence of extra-articular features of a systemic rheumatic disease, elevated erythrocyte sedimentation rate, C-reactive protein, rheumatoid factor and antinuclear antibody.
- The diagnosis of degenerative arthritis should be considered:
 - in middle-aged and older patients with single or few joints involved,
 - in those with a remote history of joint trauma,
 - in those with bony hard joint swelling with no detectable extra-articular manifestations of a systemic rheumatic disease and normal laboratory investigations.



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