# 393 Approach to Articular and Musculoskeletal Disorders

John J. Cush

Musculoskeletal complaints account for >315 million outpatient visits per year and over 20% of all outpatient visits in the United States. The Centers for Disease Control and Prevention estimate that 22.7% (52.5 million) of the U.S. population has physician-diagnosed arthritis and 22 million have significant functional limitation. While many patients will have self-limited conditions requiring minimal evaluation and only symptomatic therapy and reassurance, specific musculoskeletal presentations or their persistence may herald a more serious condition that requires further evaluation or laboratory testing to establish a diagnosis. The goal of the musculoskeletal evaluation is to formulate a differential diagnosis that leads to an accurate diagnosis and timely therapy, while avoiding excessive diagnostic testing and unnecessary treatment (Table 393-1). There are several urgent conditions that must be diagnosed promptly to avoid significant morbid or mortal sequelae. These "red flag" diagnoses include septic arthritis, acute crystal-induced arthritis (e.g., gout), and fracture. Each may be suspected by its acute onset and monarticular or focal musculoskeletal pain (see below).

Despite well-known links between certain disorders and laboratory testing, the majority of individuals with musculoskeletal complaints can be diagnosed with a thorough history and a comprehensive physical and musculoskeletal examination. The initial encounter should determine whether the musculoskeletal complaint signals a red flag condition (septic arthritis, gout, or fracture) or not. The evaluation should proceed to ascertain if the complaint is (1) *articular* or *nonarticular* in origin, (2) *inflammatory* or *noninflammatory* in nature, (3) *acute* or *chronic* in duration, and (4) *localized (monarticular)* or *widespread* (*polyarticular*) in distribution.

With such an approach and an understanding of the pathophysiologic processes, the musculoskeletal complaint or presentation can be characterized (e.g., acute inflammatory monarthritis or a chronic noninflammatory, nonarticular widespread pain) to narrow the diagnostic possibilities. A diagnosis can be made in the vast majority of individuals. However, some patients will not fit immediately into an established diagnostic category. Many musculoskeletal disorders resemble each other at the outset, and some may take weeks or months (but not years) to evolve into a recognizable diagnostic entity. This consideration should temper the desire to establish a definitive diagnosis at the first encounter.

**TABLE 393-1 EVALUATION OF PATIENTS WITH MUSCULOSKELETAL COMPLAINTS**

| |
|---|
| Goals |
| Accurate diagnosis |
| Timely provision of therapy |
| Avoidance of unnecessary diagnostic testing |
| Identification of acute, focal/monarticular "red flag" conditions |
| Approach |
| Determination of chronology (acute vs chronic) |
| Determination of the nature of the pathologic process (inflammatory vs noninflammatory) |
| Determination of the extent of involvement (monarticular, polyarticular, focal, widespread) |
| Anatomic localization of complaint (articular vs nonarticular) |
| Consider the most common disorders first |
| Formulate a differential diagnosis |

## ARTICULAR VERSUS NONARTICULAR

The musculoskeletal evaluation must discriminate the anatomic origin(s) of the patient's complaint. For example, ankle pain can result from a variety of pathologic conditions involving disparate anatomic structures, including gonococcal arthritis, calcaneal fracture, Achilles tendinitis, plantar fasciitis, cellulitis, and peripheral or entrapment neuropathy. Distinguishing between articular and nonarticular conditions requires a careful and detailed examination. Articular structures include the synovium, synovial fluid, articular cartilage, intraarticular ligaments, joint capsule, and juxtaarticular bone. Nonarticular (or periarticular) structures, such as supportive extraarticular ligaments, tendons, bursae, muscle, fascia, bone, nerve, and overlying skin, may be involved in the pathologic process. Although musculoskeletal complaints are often ascribed to the joints, nonarticular disorders more frequently underlie such complaints. Distinguishing between these potential sources of pain may be challenging to the unskilled examiner. Articular disorders may be characterized by deep or diffuse pain, pain or limited range of motion on active and passive movement, and swelling (caused by synovial proliferation, effusion, or bony enlargement), crepitation, instability, "locking," or deformity. By contrast, nonarticular disorders tend to be painful on active, but not passive (or assisted), range of motion. Periarticular conditions often demonstrate point or focal tenderness in regions adjacent to articular structures, are elicited with a specific movement or position, and have physical findings remote from the joint capsule. Moreover, nonarticular disorders seldom demonstrate swelling, crepitus, instability, or deformity of the joint itself.

## INFLAMMATORY VERSUS NONINFLAMMATORY DISORDERS

In the course of a musculoskeletal evaluation, the examiner should determine the nature of the underlying pathologic process and whether inflammatory or noninflammatory findings exist. Inflammatory disorders may be infectious (*Neisseria gonorrhoeae* or *Mycobacterium tuberculosis*), crystal-induced (gout, pseudogout), immune-related (rheumatoid arthritis [RA], systemic lupus erythematosus [SLE]), reactive (rheumatic fever, reactive arthritis), or idiopathic. Inflammatory disorders may be identified by any of the four cardinal signs of inflammation (erythema, warmth, pain, or swelling), systemic symptoms (fatigue, fever, rash, weight loss), or laboratory evidence of inflammation (elevated erythrocyte sedimentation rate [ESR] or C-reactive protein [CRP], thrombocytosis, anemia of chronic disease, or hypoalbuminemia). Articular stiffness commonly accompanies chronic musculoskeletal disorders. The duration of stiffness may be prolonged (hours) with inflammatory disorders (such as RA or polymyalgia rheumatica) and may improve with activity. By contrast, intermittent stiffness (also known as gel phenomenon) is typical of noninflammatory conditions (such as osteoarthritis [OA]), shorter in duration (<60 min), and exacerbated by activity. Fatigue may accompany inflammation (as seen in RA and polymyalgia rheumatica) but may also be a consequence of fibromyalgia (a noninflammatory disorder), chronic pain, poor sleep, depression, anemia, cardiac failure, endocrinopathy, or malnutrition. Noninflammatory disorders may be related to trauma (rotator cuff tear), repetitive use (bursitis, tendinitis), degeneration or ineffective repair (OA), neoplasm (pigmented villonodular synovitis), or pain amplification (fibromyalgia). Noninflammatory disorders are often characterized by pain without synovial swelling or warmth, absence of inflammatory or systemic features, daytime gel phenomena rather than morning stiffness, and normal (for age) or negative laboratory investigations.

Identification of the nature of the underlying process and the site of the complaint will enable the examiner to characterize the musculoskeletal presentation (e.g., acute inflammatory monarthritis, chronic noninflammatory, nonarticular widespread pain), narrow the diagnostic considerations, and assess the need for immediate diagnostic or