

Shoulder Pain: Review Questions

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QUESTIONS

Choose the single best answer for each question.

- 1. A 73-year-old woman presents with a complaint of chronic bilateral shoulder pain and swelling over the past several years. Over the past week, the swelling in her right shoulder has increased significantly, and this morning she noted a purplish discoloration in the anterior shoulder area that extends to the mid-biceps. Which of the following findings is most likely?**
 - (A) Relative preservation of joint space on plain film radiograph
 - (B) High serum ferritin level
 - (C) Tear of the bicipital tendon on magnetic resonance imaging (MRI) scan
 - (D) Positive alizarin stain on synovial fluid analysis
 - (E) *Staphylococcus epidermidis* on culture of the synovial fluid
- 2. A 63-year-old man presents with acute onset of pain in the shoulder girdle. Two weeks ago, he began to feel incessant pain in his shoulders, and he has been unable to drive himself to work in the morning. By the afternoon, he is able to lift his shoulders somewhat normally, but overall he feels extremely fatigued. What is this patient's physical examination likely to show?**
 - (A) Significant weakness on upper extremity muscle testing
 - (B) Pain with supination against resistance
 - (C) Discomfort with passive range of shoulder motion
 - (D) Marked limitation of cervical spine flexion
 - (E) Tophaceous deposits on extensor tendons
- 3. A 26-year-old mother of 18-month-old twins presents with a complaint of pain in her right shoulder, which started several weeks ago. The pain has progressed significantly, and she finds it hard to perform activities that involve reaching over her head. Physical examination abnormalities include pain in the anterior aspect of the shoulder with palpation as well as pain with resisted elbow flexion and supination of the arm. What is the most likely diagnosis for this patient?**
 - (A) Bicipital tendonitis
 - (B) Impingement syndrome
 - (C) Incomplete rotator cuff tear
 - (D) Degenerative disease of the acromioclavicular joint
 - (E) Milwaukee shoulder syndrome
- 4. A 64-year-old weekend sailor reports difficulty lifting his arm and severe pain in his right shoulder in the nighttime. Although he has had aching in his shoulder intermittently in the past, the current symptoms started 2 weeks ago after he fell into the mast while sailing. The radiograph of his shoulder shows osteoarthritis of the acromioclavicular joint and superior migration of the humeral head. What is the most appropriate action at this time?**
 - (A) Refer the patient to an orthopaedic surgeon for arthroscopic surgery
 - (B) Perform an intra-articular injection on the shoulder
 - (C) Order an ultrasonogram of the shoulder
 - (D) Initiate a course of physical therapy
 - (E) Immobilize the shoulder
- 5. A 32-year-old male diabetic has severe nighttime shoulder pain. On physical examination, range of motion is limited in all planes. A radiograph is read as normal, and an MRI scan also is normal. What is the most likely mechanism for the development of adhesive capsulitis in this patient?**
 - (A) Nonenzymatic glycosylation of the rotator cuff muscles
 - (B) Chronic inflammation of the acromioclavicular joint
 - (C) Glenohumeral instability
 - (D) Microvascular disease
 - (E) Diabetic neuropathy

(turn page for answers)

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EXPLANATION OF ANSWERS

1. (D) Positive alizarin stain on synovial fluid analysis.

This patient has the classic presentation of apatite-associated destructive arthritis (Milwaukee shoulder). Almost all affected patients are elderly and female. It is unclear whether the apatite crystals (which are identified in synovial fluid by alizarin stain) cause joint destruction by precipitating inflammation or whether they are a by-product of the inflammation. Patients commonly have low-grade pain for years. The amount of synovial fluid can be impressive (> 100 mL), and the fluid frequently is serosanguinous with the leukocytes predominantly mononuclear. The synovial lining can rupture, resulting in massive extravasation of fluid into the surrounding tissue. Radiographs usually show degenerative changes and a high-riding humerus consistent with rotator cuff pathology. The biceps tendon is not affected. Fever and constitutional signs normally accompany an infected joint; however, in an elderly patient, these findings may not be present. Infected joints are by far less common than other arthropathies, but the synovial fluid of an inflamed joint should always be cultured to rule out infection. An elevated serum ferritin is associated with hemochromatosis.

2. (C) Discomfort with passive range of shoulder motion.

Pain in the morning with improvement as the day progresses is a strong clinical clue for inflammation. This could be an early presentation of any of the inflammatory arthropathies (ie, rheumatoid arthritis, spondyloarthropathies) or polymyalgia rheumatica, which is characterized by a nonspecific synovitis of the hip and shoulder joints. Polymyositis is proximal in distribution but weakness (as reported by the patient as limitation in function as well as weakness as noted on examination) is more prominent than pain. Pain with active supination is suggestive of biceps tendonitis, a condition in which pain is activity-related (rather than inflammatory pain, which peaks after prolonged rest). Cervical spine disease can be manifested by shoulder pain but tends to worsen as the day progresses. Gout is inflammatory, but the pain pattern is acute onset of severe pain, which resolves over a matter of days. Chronic tophaceous gout can resemble rheumatoid

arthritis in appearance, but is not typically characterized by stiffness.

3. (A) Bicipital tendonitis.

Bicipital tendonitis usually occurs with rotator cuff tendonopathy or glenohumeral instability. Settings in which the biceps can be the primary problem include situations in which the biceps contracts repetitively against resistance, as in this case, in which the overuse is a result of carrying children. A healthy young woman without a history of trauma should not have a rotator cuff tear. Impingement syndrome occurs during forward flexion when the anterior portion of the acromion impinges on the supraspinatus tendon, with the signs and symptoms of rotator cuff pathology. Both degenerative disease of the shoulder and Milwaukee shoulder syndrome occur primarily in the elderly.

4. (D) Initiate a course of physical therapy.

The clinical presentation and radiograph are consistent with a rotator cuff tear. Initial management of partial tears and complete tears in the older patient should be conservative initially. In a younger patient with an acute tear, the next step would be to order an MRI scan to confirm the tear and a referral to an orthopaedic surgeon. Intra-articular injection should not be performed in the setting of acute injury. Physical therapy emphasizes maintenance of range of motion; immobilization would be counterproductive. Ultrasound examination can detect both full- and partial-thickness rotator cuff tears, but the readings are operator dependent, and in most centers, an MRI scan is the most reliable test.

5. (D) Microvascular disease.

Adhesive capsulitis is a term used to define marked limitation of shoulder movement in all planes in the absence of significant joint pathology, although the term is frequently used more broadly in clinical practice (ie, even in the setting of known joint pathology). Diabetes mellitus is commonly associated with adhesive capsulitis, most often in patients with prolonged disease, diffuse microvascular disease, or limited joint mobility syndrome. Diabetic neuropathy can result in Charcot joints, usually of the feet. Charcot joints radiographically are disorganized with excessive bone formation and resorption. Glycosylation of muscles has not been demonstrated in diabetic patients.

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RHEUMATOLOGY

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