Shoulder Questions with Answers

1. A 70-year-old female presents for a subacromial space injection after telling her primary care provider she had been experiencing 2 months of left shoulder pain. She has 4/5 strength without pain on empty can testing and external rotation on the L side compared to full strength on the right. She has negative Neer's and Hawkin's. Her biceps tendon reflex is decreased on the left compared to the right. She has a positive Spurling's test and decreased range of motion with rotation of her neck to the left. She has completed 6 weeks of physical therapy without benefit. What further diagnostic evaluation is recommended for this patient?
    a. MRI left shoulder without contrast
    b. Left shoulder x ray
    c. **MRI C spine without contrast**
    d. CT head with and without contrast
    e. No additional imaging is needed

Explanation: In patients presenting with shoulder pain, cervical radiculopathy should be considered – especially if maneuvers for intrinsic shoulder pathology are negative. For cervical radiculopathy, Spurling's maneuver has LR 4.5, decreased biceps reflex has LR 9.1, and rotation of neck to involved side < 60 degrees has a +LR 1.7 (and – if such limitation in rotation is ABSENT, the -LR is 0.2).

2. Which is an appropriate indication for a subacromial space injection?
    a. Glenohumeral Osteoarthritis
    b. Acromioclavicular Osteoarthritis
    c. Rotator cuff tendinopathy
    d. Adhesive capsulitis

Explanation: Intraarticular (rather than subacromial) steroid injections are indicated for glenohumeral and acromio-clavicular arthritis. Intraarticular glenohumeral corticosteroid injection are more efficacious than subacromical space injections for adhesive capsulitis.

3. Which of the following is an absolute contraindication to a subacromial space injection?
    a. Well-controlled Type 2 Diabetes
    b. History of shoulder surgery without intra-articular hardware
    c. Anticipated surgery within the next three months
    d. History of subacromial space steroid injection 4 months ago

Explanation: Type 2 DM is relative contraindication. History of shoulder surgery without hardware in the shoulder joint is not a contraindication. Consider avoiding CSI if patient has received an injection in the last three months.

4. Which of the following is an appropriate approach for a subacromial steroid injection?
    a.

b.

c.

d.

Explanation: There are no significant differences between posterolateral approach and lateral approach in night-time pain, shoulder function and SPADI scores. There is mixed data on whether ultrasound guidance is superior to non-ultrasound guided injections. Of note: (A) shows an acromioclavicular injection; (B) shows the posterolateral approach to subacromial injections (the correct answer); (C) shows an intraarticular glenohumeral joint injection; and (D) shows a biceps tendon sheath injection.

Ogbeivor C, Bandaru S, Milton C. A comparison of the effectiveness of lateral versus posterior approach to shoulder injection in patients with subacromial impingement syndrome: A pragmatic randomized controlled trial. Musculoskeletal Care. 2019 Sep;17(3):257-268. doi: 10.1002/msc.1416. Epub 2019 Aug 2. PMID: 31373430.

5. A 45-year-old presents with right shoulder pain for 4 months that makes it hard for him to sleep. He especially notices the pain when he is stocking shelves. On exam, he has pain without weakness with empty can testing. He has positive Neer's and Hawkin's testing. He asks if there is a "quick fix" so he can get back to work. What can you tell him about his options for treatment?

    a. A minimum of 6 weeks of physical therapy is required to improve pain and function
    b. Subacromial space corticosteroid injection can improve pain and function at 8 weeks
    c. Arthroscopic subacromial decompression is more likely to have long term resolution of his pain than conservative management
    d. Subacromial space corticosteroid injection may make him less likely to participate in PT in the future

Explanation: In a recent *Lancet* trial with 700 patients with subacute shoulder pain "attributed to RC disorder," 6 PT sessions were not superior to 1 session. Subacromial space steroid injection improved SPADI (Shoulder Pain and Disability Index) score at 8 weeks, but scores were no different than no CSI at 6 and 12 months. A cost-effectiveness analysis (based on U.K. pricing) suggested that a single session with a physical therapist plus a steroid injection would provide the best value. Also, participants were **more** likely to report doing their exercises as advised after injection. In addition, there may not be clinically significant benefit of arthroscopic sub-acromial decompression surgery for subacromial shoulder pain.

Hopewell S, Keene DJ, Marian IR, et al. Progressive exercise compared with best practice advice, with or without corticosteroid injection, for the treatment of patients with rotator cuff disorders (GRASP): a multicentre, pragmatic, 2 × 2 factorial, randomised controlled trial. *Lancet*. 2021 Jul 31;398(10298):416-428.

Beard DJ, Rees JL, Cook JA, et al. Arthroscopic subacromial decompression for subacromial shoulder pain (CSAW): a multicentre, pragmatic, parallel group, placebo-controlled, three-group, randomised surgical trial. *Lancet* 2018; 391**:** 329–38.

6. A 60-year-old female with past medical history of type 2 diabetes presents with 7 months of left shoulder pain that started after a fall. She did not want to cause further injury to the shoulder so she has since been wearing a sling during the day. On exam, she has limited active and passive range of motion with flexion, abduction, external and internal rotation. You refer her to physical therapy and order an x-ray of the shoulder. Which is the best next step for treatment?

    a. Refer her to procedure clinic for subacromial space injection
    b. Refer her to PM&R for Glenohumeral joint injection
    c. Refer her to orthopedics for manipulation under anesthesia plus steroid injection
    d. Refer her to orthopedics for arthroscopic capsular release

Explanation: This patient's symptoms suggest adhesive capsulitis. A recent *Lancet* trial randomized 500 patients with frozen shoulder to PT plus CSI, manipulation under anesthesia plus CSI followed by PT, or arthroscopic capsular release followed by PT. There was no clinically important difference in outcomes.

Eight serious adverse events occurred in the capsular-release group, two occurred in the manipulation group, and none occurred with PT alone.

Of note, severe glenohumeral arthritis can also cause reduced passive range of motion due to mechanical obstruction. This is why the x ray was ordered in the stem.

Rangan A, Brealey SD, Keding A et al. Management of adults with primary frozen shoulder in secondary care (UK FROST): a multicentre, pragmatic, three-arm, superiority randomised clinical trial. *Lancet*. 2020 Oct 3;396(10256):977-989.

7. 55-year-old female presents with 2 years of anterior shoulder pain with morning stiffness lasting ~20 minutes. On exam, she has no erythema or swelling but has pain with abduction and internal and external rotation. An x-ray shows glenohumeral arthritis. She denies history of rotator cuff disease, shoulder dislocations or any shoulder trauma. What other work up should be considered?

    a. Aspiration of shoulder joint, send for cell count
    b. Aspiration of shoulder joint, send for crystals
    c. Check iron, TIBC, and ferritin
    d. Check A1c
    e. No further work up

Explanation: Osteoarthritis of the glenohumeral joint most often occurs with a history of trauma or significant rotator cuff injury (since the shoulder is a non-weight bearing joint). If the patient doesn't report a suggestive history, consider a metabolic disease (like hemochromatosis). Rheumatoid arthritis is also in the differential for GH arthritis, but this patient's history is not consistent with RA. Diabetes increases the risk of adhesive capsulitis, but not GH arthritis.

8. A 64-year-old man presents with anterior shoulder pain that is worse with lifting objects for the last 3 months. On exam, he has positive Speed's and Yergason's tests, a negative painful arc, negative empty can test and normal strength with internal and external rotation. He is quite tender to palpation at the area palpated with the thumb below. What is the most likely diagnosis?
    a. Acromioclavicular arthritis
    b. Subscapularis tendinopathy
    c. Biceps tendonitis
    d. Subacromial bursitis

Explanation: Speed and Yergason can also be positive in RC tendinopathy, but his significant tenderness over the biceps tendon and other negative RC tests make biceps tendonitis more likely.

9. A 50 year-old rock climbing instructor with well-controlled Type 2 diabetes presents with 3 months of difficulty lifting his right arm over his head causing him to miss several weeks of work. He has participated in 3 months of PT and has been taking ibuprofen and acetaminophen without much relief. On exam, he has a positive drop arm test on the right. What is the next best step in management?

    a. Continue PT for 3 more months
    b. Refer to orthopedic surgery for rotator cuff repair
    c. Perform a subacromial space corticosteroid injection
    d. Refer to physical medicine and rehab for an intra-articular glenohumeral joint injection

Explanation: Surgery is indicated for large rotator cuff tears with persistent pain after 3 months of PT= For partial thickness tears, there is no difference in outcomes between PT and surgery. However, for full thickness tears, surgery is significantly better than conservative management for pain and function at 2 years.

Cederqvist S, Flinkkilä T, Sormaala M et al. Non-surgical and surgical treatments for rotator cuff disease: a pragmatic randomised clinical trial with 2-year follow-up after initial rehabilitation. Ann Rheum Dis. 2021 Jun;80(6):796-802.