MULTIPLE CHOICE

MSK - MIXED EXAM - ANSWER KEY

1. To evaluate the anterior talofibular ligament with ultrasound, the transducer is placed connecting which two bony landmarks?

A. Distal fibula (lateral malleolus) and talus
B. Calcaneus and cuboid
C. Medial malleolus and navicular
D. Tibia and medial cuneiform

2. A well-defined, hypoechoic, fusiform soft tissue mass along the course of a peripheral nerve that demonstrates a nerve entering and exiting the lesion is most consistent with which diagnosis?

A. Peripheral nerve sheath tumor (e.g., schwannoma)
B. Hematoma
C. Ganglion cyst
D. Lipoma

3. Which of the following is a classic sonographic appearance of a wooden splinter foreign body in the soft tissues of the foot?

A. Echogenic linear focus with surrounding hypoechoic halo of granulation tissue
B. Hyperechoic well-circumscribed compressible mass with no shadow
C. Diffusely hypoechoic muscle with feathery architecture
D. Anechoic cystic structure with thin septations

4. A fluid-filled cystic structure deep to the iliopsoas tendon and anterior to the hip joint capsule, which may communicate with the joint in up to 15 percent of patients, most likely represents which entity?

A. Iliopsoas bursitis
B. Pes anserine bursitis
C. Ischiogluteal bursitis
D. Trochanteric bursitis

5. Which sonographic finding is most characteristic of chronic common extensor tendinosis at the lateral epicondyle?

A. Focal hypoechoic thickening with loss of fibrillar pattern
B. Anechoic fluid-filled tendon sheath
C. Hyperechoic foci with comet-tail artifact throughout the tendon
D. Diffuse anechoic thinning of the tendon

6. Which rotator cuff muscle inserts on the lesser tuberosity of the humerus?

A. Subscapularis
B. Infraspinatus
C. Supraspinatus
D. Teres minor

7. Anisotropy in rotator cuff imaging refers to:

A. Posterior acoustic enhancement deep to a fluid-filled bursa
B. Artifactual hypoechogenicity of a tendon when the beam is not perpendicular to its fibers
C. True hypoechoic change due to tendon degeneration
D. Reverberation artifact arising from the bony cortex

8. During ultrasound of the elbow joint, a small posterior fluid collection in the olecranon fossa with the elbow flexed about 90 degrees most likely represents:

A. A normal anatomic structure that requires no follow-up
B. A joint effusion
C. A complete triceps tendon tear
D. An olecranon bursitis only

9. The most common location of a dorsal wrist ganglion is:

A. Over the scapholunate ligament
B. Over the first extensor compartment
C. Over the distal radioulnar joint
D. Over the pisotriquetral joint

10. Compared with MRI, a particular strength of musculoskeletal ultrasound is:

A. Real-time dynamic evaluation during active and passive motion
B. Superior visualization of intraosseous marrow
C. Higher contrast for deep posterior shoulder structures
D. Independence from operator skill

11. On sonographic stress testing of the ulnar collateral ligament, a finding of increased medial ulnohumeral joint gapping during valgus stress compared with the contralateral side most likely indicates:

A. Normal physiologic laxity
B. Ulnar collateral ligament injury or insufficiency
C. Olecranon bursitis
D. Common flexor tendinosis

12. To distinguish a focal hypoechoic articular-side partial tear from anisotropy in the supraspinatus, the best maneuver is to:

A. Toe (heel-toe) the transducer to make the beam perpendicular to the tendon fibers
B. Increase overall gain
C. Switch to power Doppler
D. Decrease the focal zone depth

13. On ultrasound, plantar fasciitis is most often diagnosed when the proximal plantar fascia shows which finding?

A. Hyperechoic shadowing mass within the fascia
B. Normal echogenicity with marked color Doppler flow only
C. Anechoic complete discontinuity at the midfoot
D. Hypoechoic fusiform thickening at the calcaneal origin

14. Which is the MOST common cause of a false-positive diagnosis of rotator cuff tear in novice sonographers?

A. Misinterpreting reverberation artifact as a tear
B. Misinterpreting anisotropy artifact as a hypoechoic tear
C. Misinterpreting a vessel as a tear
D. Misinterpreting hyaline cartilage as a tear

15. Which secondary sonographic sign is most suggestive of a full-thickness rotator cuff tear?

A. Convex-outward bulging of the deltoid
B. Mild anechoic distension of the long head biceps tendon sheath
C. Increased tendon thickness with preserved fibrillar pattern
D. Concave-outward depression of the deltoid contour into the tendon defect

16. Lateral epicondylitis (tennis elbow) most commonly involves which tendon at its origin on the lateral epicondyle of the humerus?

A. Extensor carpi ulnaris
B. Extensor carpi radialis brevis
C. Pronator teres
D. Flexor carpi radialis

17. On transverse ultrasound of the popliteal fossa, the neck of a Baker cyst characteristically passes between which two structures?

A. The medial and lateral heads of the gastrocnemius
B. The biceps femoris and the iliotibial band
C. The popliteus tendon and the lateral collateral ligament
D. The medial head of the gastrocnemius and the semimembranosus tendon

18. Which transducer choice BEST balances resolution and penetration for routine imaging of an adult shoulder rotator cuff?

A. A low-frequency curvilinear transducer optimized for abdominal imaging
B. An endocavity transducer used for pelvic imaging
C. A high-frequency linear-array transducer in the mid-to-upper MHz range used by general MSK protocols
D. A phased-array transducer used for cardiac windows

19. When comparing the symptomatic to the asymptomatic hip, a difference in anterior synovial recess thickness is suggestive of effusion when the symptomatic side exceeds the contralateral by approximately:

A. 20 mm or more
B. 100 mm or more
C. 0.2 mm or more
D. 2 mm or more

20. Widening of the acromioclavicular joint with overlying soft tissue swelling after acute trauma most likely represents:

A. Calcific tendinitis
B. Rotator cuff tendinosis
C. Adhesive capsulitis
D. Acromioclavicular joint separation (sprain)

21. Which structure is MOST susceptible to the anisotropy artifact?

A. Subcutaneous fat
B. Cortical bone surface
C. Tendon
D. Simple fluid in a bursa

22. Using the Graf classification, a mature normal infant hip is defined by an alpha angle of:

A. Less than 43 degrees
B. Between 43 and 49 degrees
C. Between 50 and 59 degrees
D. 60 degrees or greater

23. Dynamic ultrasound evaluation is MOST useful for which of the following findings?

A. Measuring cortical bone thickness
B. Detecting an avascular intratendinous calcification
C. Quantifying hyaline cartilage volume
D. Demonstrating snapping of the iliotibial band over the greater trochanter

24. Pes anserine bursitis on ultrasound appears as an anechoic or hypoechoic fluid collection in which location?

A. Anterior to the patella in the subcutaneous tissue
B. Deep to the conjoined pes anserine tendons at the anteromedial proximal tibia
C. Lateral to the iliotibial band at the lateral femoral condyle
D. Posterior to the medial gastrocnemius head

25. Which sonographic feature most reliably distinguishes a ligament from an adjacent tendon?

A. A ligament demonstrates posterior shadowing while tendon does not
B. A ligament connects bone to bone and shows a more compact, slightly less ordered fibrillar pattern
C. A ligament shows a honeycomb pattern while tendon does not
D. A ligament is anechoic while tendon is hyperechoic

26. Sonographic findings of extensor carpi ulnaris (ECU) subluxation are best demonstrated by:

A. Compression of the dorsal capsule of the radiocarpal joint
B. Imaging only in long axis with the wrist neutral
C. Static imaging with the wrist in full pronation
D. Dynamic imaging during supination with the wrist in ulnar deviation

27. Which sonographic feature best supports impingement rather than rotator cuff tear?

A. An empty bicipital groove
B. Nonvisualization of the supraspinatus with deltoid touching bone
C. Dynamic bunching of the cuff and bursa beneath the acromion with arm abduction, without a discrete tendon defect
D. A focal hypoechoic gap extending from the bursal to the articular surface

28. A C-shaped or boomerang appearance of the peroneus brevis tendon wrapping around the peroneus longus on transverse imaging is most suggestive of which pathology?

A. Normal peroneus brevis
B. Accessory peroneus quartus muscle
C. Peroneus longus rupture
D. Longitudinal split tear of peroneus brevis

29. Which transducer is most appropriate for evaluating the superficial gluteus medius tendon at its trochanteric insertion in an average-sized adult?

A. A high-frequency linear array transducer
B. An endocavitary transducer
C. A low-frequency curvilinear transducer
D. A phased array (sector) cardiac transducer

30. A knee joint effusion on ultrasound is most reliably distinguished from synovial hypertrophy by which feature?

A. Hyperechoic content with posterior acoustic shadowing
B. Anechoic content that is noncompressible
C. Hyperechoic, noncompressible tissue with internal Doppler flow
D. Anechoic, freely compressible content without internal Doppler flow

31. Which sonographic feature is most suggestive of a complete tear of the ulnar collateral ligament of the thumb (gamekeeper's/skier's thumb) with a Stener lesion?

A. Hyperechoic foci within the UCL with posterior shadowing
B. Anechoic fluid in the MCP joint without ligament disruption
C. Diffuse hypoechoic thickening of an intact UCL
D. A retracted, balled-up UCL stump lying superficial to the adductor aponeurosis

32. Which maneuver is performed during dynamic ultrasound of the infant hip to assess for instability?

A. Apley grind and pivot-shift
B. Barlow (posteriorly directed stress on the adducted, flexed hip) and Ortolani (abduction with anterior lift)
C. Hawkins-Kennedy and Neer
D. McMurray and Lachman

33. An anechoic, well-circumscribed fluid collection located between the skin and the anterior patella in a patient who works on his knees is most consistent with:

A. Pes anserine bursitis
B. Suprapatellar joint effusion
C. Baker cyst
D. Prepatellar bursitis (housemaid's knee)

34. For imaging a deep structure such as the hip joint in a large adult, which transducer is MOST appropriate?

A. Standard high-frequency linear transducer set at maximum frequency
B. High-frequency linear-array hockey-stick transducer
C. Phased-array transducer at neonatal settings
D. Low-frequency curvilinear transducer

35. On long-axis sonographic evaluation of a normal common extensor tendon at the lateral epicondyle, the expected echotexture is best described as:

A. Hyperechoic and fibrillar
B. Hyperechoic with posterior shadowing
C. Anechoic with through-transmission
D. Hypoechoic and homogeneous

36. Spatial compounding may help reduce anisotropy artifact because it:

A. Acquires and averages frames from multiple beam-steering angles
B. Suppresses harmonic frequencies generated in tissue
C. Increases the operating frequency of the transducer
D. Eliminates side-lobe artifact by changing apodization

37. During sonographic evaluation of the common extensor tendon, anisotropy is best minimized by:

A. Keeping the transducer perpendicular to the tendon fibers
B. Decreasing the transducer frequency
C. Increasing the overall gain

D. Angling the beam at 45 degrees to the fibers

38. Which finding best differentiates flexor tenosynovitis from simple flexor tendinosis on ultrasound?

A. Anechoic or complex fluid distending the tendon sheath
B. Hypoechoic tendon thickening without sheath fluid
C. Anisotropy at the tendon insertion
D. Hyperechoic intratendinous calcifications

39. The transverse carpal ligament forms which boundary of the carpal tunnel?

A. The dorsal floor
B. The ulnar wall
C. The radial wall
D. The volar (palmar) roof

40. On dynamic ultrasound, the peroneal tendons are seen to snap anteriorly over the lateral malleolus during dorsiflexion and eversion. This finding represents what condition?

A. Peroneal tendinosis
B. Os peroneum syndrome
C. Peroneus brevis longitudinal split tear
D. Peroneal tendon subluxation

41. A full-thickness rotator cuff tear classically produces which sonographic finding?

A. Hyperechoic foci within the tendon with posterior shadowing
B. Increased tendon thickness with preserved fibrillar pattern
C. A defect extending from the bursal to the articular surface of the tendon
D. Focal hypoechoic change confined within the tendon substance

42. On ultrasound, which finding favors a partial-thickness rather than a full-thickness tear of the common extensor tendon at the lateral epicondyle?

A. Diffuse fatty replacement of the tendon
B. Cortical irregularity of the radial head without tendon abnormality
C. Complete absence of the tendon at the lateral epicondyle
D. A focal hypoechoic or anechoic cleft within the tendon without complete fiber discontinuity

43. Increased color or power Doppler flow within a thickened, hypoechoic common extensor tendon at the lateral epicondyle most likely represents:

A. Normal intratendinous vascularity
B. Arteriovenous fistula
C. Septic tenosynovitis
D. Neovascularity associated with tendinosis

44. Which of the following is the most appropriate sonographic feature used to confirm placement of fluid within a tendon sheath rather than within the tendon itself during a sheath injection?

A. Loss of fibrillar pattern with focal tendon enlargement
B. Echogenic mass within the central fibers of the tendon
C. Anechoic fluid distending the sheath circumferentially around the tendon without intratendinous swelling
D. Color Doppler flow within the tendon substance

45. During long-axis scanning of the supraspinatus, a focal hypoechoic defect is seen only at the deep surface of the tendon adjacent to the greater tuberosity, without extending to the bursal surface. This is best described as:

A. Partial-thickness bursal-side tear
B. Full-thickness tear
C. Intrasubstance tear
D. Partial-thickness articular-side tear

46. Which rotator cuff tendon is most commonly torn?

A. Supraspinatus
B. Teres minor
C. Infraspinatus
D. Subscapularis

47. On long-axis imaging, the supraspinatus tendon courses between which two bony landmarks?

A. The acromion superiorly and the lesser tuberosity laterally
B. The humeral head articular cartilage medially and the greater tuberosity laterally
C. The lesser tuberosity medially and the bicipital groove laterally
D. The coracoid medially and the acromion laterally

48. During a rotator cuff examination, the supraspinatus tendon appears artifactually hypoechoic. Which adjustment is the MOST appropriate first step?

A. Switch to a lower-frequency transducer
B. Apply firm graded compression over the tendon
C. Heel-toe the transducer to keep the beam perpendicular to the tendon fibers
D. Increase the overall gain

49. On a transverse image at the level of the bicipital groove, the structure traveling longitudinally between the greater and lesser tuberosities is the:

A. Short head of the biceps tendon
B. Coracobrachialis tendon
C. Long head of the biceps tendon
D. Subscapularis tendon

50. For a complete distal biceps tendon tear, the most reliable sonographic finding is:

A. Diffuse hypoechoic thickening of the tendon
B. Hyperechoic foci within the tendon without retraction
C. Mild fluid in the bicipitoradial bursa with intact tendon
D. Nonvisualization of the tendon at the radial tuberosity with retracted tendon stump