Is transthoracic lung biopsy a safe procedure?

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To the Editor,

The transthoracic lung biopsy is a minimally invasive diagnostic procedure used for determining the management of patients with a high suspicion for malignancy lesions. Although the importance of percutaneous lung biopsy has been clearly stated by many studies [1-3], we observed that percutaneous biopsy is still regarded with great concern by both patients and physicians mostly because of its possible complications. In literature, complication rates after percutaneous lung biopsies reach up to 38.8% while major complications occur in up to 5.7% of cases [3]. The most frequently described post-procedural complication is pneumothorax, occurring in 25% of cases [3]. Severe complications include pneumothorax requiring intervention, haemothorax, air embolism, needle track seeding and death [4]. Literature describes a 0.061% rate for air embolism and tumor seeding, 0.092% rate for haemothorax and 0.07-0.15% rate for death [4]. The purpose of this letter is to point out that percutaneous lung biopsy is underappreciated since it is a rapid, accurate and safe diagnostic tool with a relatively low rate of complications.

A group of 317 patients underwent percutaneous lung core biopsies in our hospital between July 2015 and June 2018. The procedures were guided either by computed tomography (CT) or ultrasound (US) and were performed with 18 G Tru-cut needles. The decision for performing the biopsy as well as the selection of the puncture site were made based on CT examinations; this was considered sufficient also for subsequently US-guided procedures, since the morphologic correlation between CT and US in lung lesions is reliable [5]. Of the 317 patients, complications occurred in 33 cases (10.41%): 25 pneumothoraces (7.89%), 3 haemothoraces (0.95%), 7 alveolar haemorrhages (2.21%) and 1 infection at puncture site (0.32%), in a patient with decompensated diabetes mellites. There were no cases of air embolism, needle track seeding or death.

To sum up, the lung biopsy is a relatively safe procedure, given the adequate selection of patients. The complication rates in our hospital are comparable to larger internationally published data.

References


Suprastyloid crest of the radius in wrist ultrasonography:
a bony prominence not to mistake for Lister’s tubercle

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To the Editor,

Ultrasound (US) is becoming increasingly popular amongst physiatrists to diagnose and treat musculoskeletal (MSK) pathologies. Well-designed standardized protocols have been published to scan the most common painful joints and surrounding structures. At the wrist, Lister’s tubercle, which is also known as the dorsal tubercle, serves as the main landmark to identify the dorsal extensor compartments at the distal radius [1]. It is a clear boundary between the 2nd compartment, which sits on the radial side of the tubercle, and the 3rd and 4th compartments, which sit on its ulnar side. However, in many patients, another similarly shaped bony prominence is present between the 1st and 2nd compartments. It is not mentioned in most reference MSK US textbooks [2,3] and is called the suprastyloid crest of the radius (fig 1, supplementary video 1, on the journal site). Its Latin name is cristà suprastyloidea radii [4] and it lies just proximal to the radial styloid and corresponds to the actual insertion site of the brachioradialis muscle.

Fig 1. This schematic diagram depicts the anatomy of the six extensor compartments at the dorsal wrist. Lister’s tubercle, also known as the dorsal tubercle, (arrow) divides the 2nd and 3rd compartments, whereas the suprastyloid crest (arrowhead) divides the 1st and 2nd compartments. 1st compartment: APL, abductor pollicis longus. EPB, extensor pollicis brevis. 2nd compartment: ECRL, extensor carpi radialis longus. ECRB, Extensor carpi radialis brevis. 3rd compartment: EPL, extensor pollicis longus. 4th compartment: ED, extensor digitorum. EIP, extensor indicis proprius. 5th compartment: EDM, extensor digiti minimi. 6th compartment: ECU, extensor carpi ulnaris.

In some patients with a more prominent suprastyloid crest, it might be mistaken for Lister’s tubercle by novice sonographers. In that case, the 1st compartment would be misidentified as the 2nd compartment, and confusion might ensue. However, no 3rd compartment would be seen ulnar to the bony prominence, and the 2nd compartment does not contain as many tendons as the 4th.

Easy ways to avoid this pitfall are to palpate the bony landmarks before placing the US probe on the patient’s
wrist. Lister’s tubercle is located more dorsally on the radius, and the suprastyloid crest is more on the radial edge of the radius, even if the distance separating the two bony prominences is often around 1.5-2 cm. Also, the ultrasonographer must use compartment anatomy to validate what compartment(s) he/she is looking at: How many tendons does it contain? What are the adjacent compartments? And of course: Where are the important bony landmarks?

Hopefully, this brief visual vignette will have educated readers on one of the less known bony prominences of the dorsal wrist, the suprastyloid crest, and will allow US professors and students to better teach and learn sonoographic anatomy.

References

Ultrasound imaging for lateral gastrocnemius muscle injury: tennis leg revisited

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To the Editor,

A 37-year-old male presented with left calf pain for the last 5-6 months. He declared that the problem had suddenly occurred during a match (playing football) and that he had become a little better after rest. In the meantime, he had received a 3-week physical therapy after which he had partially improved. Medical history and physical examination was suggestive for ‘tennis leg’ (strain at the myotendinous junction of the medial head of the gastrocnemius muscle). Accordingly, ultrasound (US) examination was also performed. While US imaging was negative for ‘tennis leg’, diligent sonopalpation uncovered that the patient’s complaints were actually localized more on the lateral side where the myotendinous junction appeared to be asymmetric as compared to the normal side.

Fig 1. Comparative long- (A) and short-axis (B) US imaging for the calf muscles. White arrowhead shows the indentation at the myotendinous junction of the lateral head of the gastrocnemius muscle (left images) when compared to the normal side (right images). GM; Medial head of the gastrocnemius muscle, GL; Lateral head of the gastrocnemius muscle, sc; subcutaneous tissue.
normal side (fig 1). In light of the US findings, the patient was diagnosed with a healing strain of the lateral head of the gastrocnemius muscle.

Calf pain is a common complaint among patients of all ages but is most frequent in young and active people (especially runners). Often, calf strains or ruptures are seen in the medial gastrocnemius muscle (i.e. ‘tennis leg’) but other components of the posterior leg including the lateral gastrocnemius, soleus and plantaris may also harbor the underlying cause/lesion [1]. These injuries usually occur during physical activities whereby forced dorsiflexion of the ankle and simultaneous extension of the knee are inevitable. Patients commonly report a sudden tear or ‘pop’ in their posterior leg after which they start suffering acute pain and tenderness [2]. According to the imaging studies, involvement of the medial gastrocnemius occurs in 58 to 65% of all cases; the lateral gastrocnemius in 8 to 38% and other muscles are less frequent [2,3].

Presenting this (rare) case of ours, firstly, we emphasise that medical history and physical examination might sometimes be insufficient for an exact diagnosis. Secondly, sono-palpation is definitely helpful for demonstrating and the prompt understanding of the lesion (for the physician and for the patient alike) [4]. Last but not least, especially when an intervention is to be planned, the aforementioned ‘sonographic understanding’ will turn into ‘precise targeting’ also [5].

References

The utility of ultrasound examination in cubital tunnel syndrome caused by heterotopic ossification

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To the Editor,

A 65-year-old man presented with a one-year history of bilateral paresthesia of the ulnar side of the forearm and 4th to 5th finger, accompanied by numbness and weakness of the mentioned area. The patient also reported sleep disturbance due to tingling sensations in his hand and fingers, resulting in awakening 3-4 times per night. His history involved 30 years working with a vibrating sander.

Clinical examination revealed hypotrophy of the interosseous muscles. Tinel’s test was positive only over the ulnar nerve in the right ulnar sulcus area. Electromyography and nerve conduction studies revealed bilateral cubital tunnel syndrome, more severe on the right side. Ultrasound (US) examination of both elbows showed a hyperechoic mass causing acoustic shadowing, in close contact with the ulnar nerve on the right side. The ulnar nerve was swollen bilaterally (right side, cross-sectional area 15 mm²; left side 11 mm²). Radiographs of the
Extensor digitorum brevis manus is uncommon but can easily be misinterpreted during wrist ultrasound examination

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To the Editor

A 37-year-old female complained of a distended sensation over her right wrist for the last six months. She reported occasional swelling at its dorsal aspect, accompanied by only soreness but no pain after 30 minutes of continuous computer use. The medical history was otherwise unremarkable.
She was referred for an ultrasound (US) examination of the wrist. Pre-scanning physical examination revealed no tenderness and normal wrist motions. The transducer was first placed in the transverse plane at the ulnar styloid level. A hypoechoic mass was visualized between the extensor indicis (EI) and extensor digitorum communis tendons (fig 1A). Power Doppler imaging showed increased intrallesional vascularity. Additionally, a ganglion cyst was seen emerging from the joint between the capitate and scaphoid. The transducer was then pivoted to the longitudinal plane and several parallel hyperechoic striates were seen inside the mass (fig 1B). We asked the patient to flex and extend the wrist and found out that the mass had a synchronized movement with finger extensor tendons (Supplementary Video 1, on the journal site). As a similar mass/structure was also identified at the contralateral wrist, she was considered to have bilateral extensor digitorum brevis manus (EDBM) muscles (fig 1C). We advised her to avoid any overuse of the wrist and gave instructions regarding the proper ergonomics for using electronic gadgets.

The EDBM is an accessory muscle inside the fourth extensor compartment of the dorsal wrist [1]. It usually emanates from the radiocarpal joint capsule and inserts distally on the EI tendon or the extensor hooks of middle, ring and little fingers. It receives innervation and vascular supply from the posterior interosseous nerve and artery, respectively. Its prevalence is around 2.3% in the general population based on a previous meta-analysis [2]. Participants with EDBM muscles are mostly asymptomatic and up to 50% of them have bilateral EDBM [1].

Of note, the existence of the EDBM muscle may increase the intra-compartmental pressure, leading to compression of the posterior interosseous nerve. In our case, concomitant presence of the EDBM muscle and the ganglion cyst further congested the compartment. Therefore, after repetitive wrist movements, the blood flow to the EDBM muscle increased, resulting in a distension feeling due to muscle edema.

Undoubtedly, US imaging is useful for the diagnosis of several wrist pathologies [3,4]. However, once unfamiliar with its presence, the EDBM muscle can easily/likely be interpreted as a hypervascular tumor originating from the finger extensor tendon sheath- especially in the axial plane. During longitudinal imaging, its echotexture can be better clarified i.e. multiple hyperechoic lines under a hypoechoic background are consistent with perimysium in a muscle. Importantly, the synchronized movement with adjacent finger extensor tendons (on dynamic imaging) and bilateral presence (on comparative imaging) further confirmed the mass/structure to be an accessory muscle. In short, this report highlighted a relatively rare muscle variation on the dorsal hand, which should not be misinterpreted as a pathological finding during (a convenient but comprehensive) wrist US examination.

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References