

Parsonage Turner syndrome after needle electromyography: a needle in a haystack

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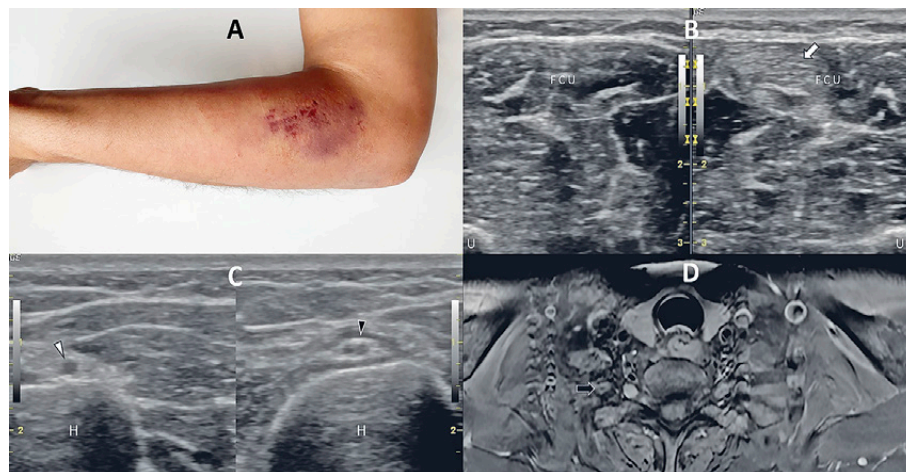


Fig 1. Swelling and ecchymoses are seen at the injection site (A). Comparative/axial ultrasound images show the hyperechoic cloudy appearance of the ventral part of the right flexor carpi ulnaris (FCU) muscle (white arrow) and the normal left FCU muscle (B). Comparative ultrasound imaging for the radial nerve; axial view shows the normal left (white arrowheads) and the edematous right radial nerve (black arrowheads) at the spiral groove (C). Axial post-contrast T1 weighted MRI image (D) shows brachial plexitis of the right side (black arrow). FCU – flexor carpi ulnaris muscle, U – ulna, H – humerus

To the Editor,

A 47-year-old man presented to the outpatient clinic with upper back and forearm pain. A day prior, he underwent needle electromyography (EMG) to evaluate his digastric right flexor carpi ulnaris (FCU) muscle for research purposes. On the evening of the procedure, the patient developed severe pain at the needle injection site, generalized ipsilateral arm and periscapular pain, as

well as numbness in his right 2nd and 3rd fingers. Physical examination revealed tenderness, swelling and mild ecchymosis (fig 1A). Shoulder abduction relief test was positive, and he had weakness (4/5) in the right triceps muscle, hypoesthesia on the 2nd and 3rd fingers and diminished triceps reflex.

Comparative ultrasound (US) examination revealed hyperechoic areas in the ventral part of the right FCU muscle (fig 1B) and edematous right radial nerve at the spiral groove (fig 1C). Since the patient had unbearable pain, methylprednisolone 40 mg and local anesthetic (2 ml bupivacaine) were applied to both FCU compartments under US-guidance (video 1, on the journal site). As his symptoms persisted, electrodiagnostic studies revealed denervation potentials with decreased recruitment of motor unit action potentials only in the right triceps muscle. Magnetic resonance imaging of brachial plexus showed

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thickening and contrast enhancement in the right brachial plexus indicating Parsonage-Turner Syndrome (PTS) (fig 1D). As the patient's pain decreased, the corticosteroid dose was tapered and stopped after three weeks.

Herein, we present a case of PTS triggered after EMG. The pathophysiology and etiology of the PTS is uncertain with different mechanisms have been postulated for the onset of this condition in such situations [1]. The two leading theories regarding the mechanism of iatrogenic PTS include traction injury to the brachial plexus resulting from improper positioning and immune-mediated inflammation of the brachial plexus [2].

Supporting the latter theory, as our patient's procedure involved little to no traction or compression injury to the brachial plexus, an inflammatory reaction is pro-

posed due to the hematoma and increased intracompartmental pressure after the needle EMG. In the end, regardless of the exact mechanism, we highlight the importance of prompt management with close follow-up in PTS.

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Supplementary video 1. Ultrasound-guided corticosteroid and local anesthetic injection to the ventral part of the right FCU muscle. FCU – flexor carpi ulnaris muscle, arrow – needle

Ultrasound-guided thrombin injection combined with micro-coils embolization for treatment of thoracoacromial artery pseudoaneurysm

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To the Editor,

A 74-year-old man developed a lump in his left chest after radiofrequency ablation for atrial fibrillation using percutaneous left subclavian vein puncture surgery. Ultrasound examination unveiled an iatrogenic pseudoaneurysm (PSA) of the thoracoacromial artery.

The measured peak velocity of the PSA reached up to 200 cm/s. Initially, we attempted ultrasound-guided thrombin injection (UTGI), administering 0.5 ml of thrombin into the lesion, followed by confirmation of complete thrombus formation using color Doppler ultra-

sound. Three days later, ultrasound showed that the PSA was recanalized with the cavity size of 27×17 mm and overall PSA looked partially thrombotic with a trace of round-trip blood flow whose peak velocity was up to 100 cm/s. Therefore, a second UGTI was carried out, employing 0.8 ml of thrombin. Unfortunately, subsequent examination indicated that PSA remained recanalized. Then we performed a third UGTI combined with micro-coils embolization, while ceasing the use of anticoagulants for 3 days. About 1 ml amount of 250 U/ml thrombin was injected into the cavity of PSA away from its neck and 3 micro-coils were placed into the PSA neck. Ultrasound examination after 24 hours indicated that no blood flow existed in the cavity. After a month of recovery, the cavity itself contracted significantly, the distal artery was free of obstruction (fig 1).

Iatrogenic thoracoacromial artery PSA was caused by improper puncture on left subclavian vein that injured neighboring thoracoacromial artery during radiofrequency ablation. In this case, direct injection of thrombin

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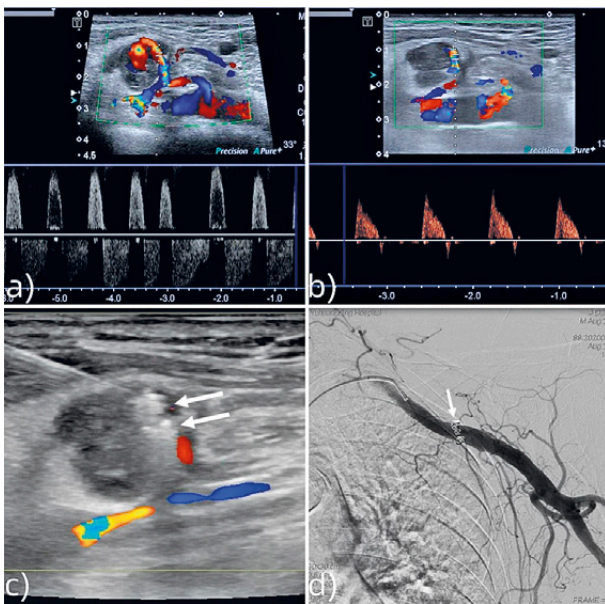


Fig 1. a) Doppler ultrasonography showed that the PSA neck had round-trip blood flow; b) Three days after UGTI, the PSA was recanalized with round-trip blood flow; c) During the third UGTI combined with micro-coils embolization therapy, ultrasonography showed that 3 micro-coils were placed into the PSA neck (arrows); d) DSA showed that the left thoracic artery was the parent artery without contrast agent overflowing, accompanied by 3 microcoils near the neck of the PSA (arrow).

twice failed to prevent reperfusion. Two reasons account for this: first, frequently administered anticoagulant for the patient to prevent restenosis of vessels counteracted the formation of thrombus with thrombin [1]. Secondly, recanalization relies on the location of arteries, that is the presence of the clavicle near the PSA cavity made thrombus difficult to harden through external compression, even after thrombin was injected. Zhao et al [2] described 4 successful treatments on traumatic PSA in the lower limbs with micro-coils embolization, but we used thrombin injection combined with micro-coils embolization. Based upon our result, micro-coils embolization was a viable solution in treating PSA lying in the fact that the coils can slow down blood flow to promote thrombosis formation and avoid the recanalization accordingly.

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Piezogenic papules

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To the editor,

A 64-year-old female was referred for an ultrasound (US) evaluation after she reported multiple painful bumps on her heels. Her dermatologist suggested the diagnosis

of piezogenic papules. The patient presented with skin-colored papules that protruded from the lateral side of both heels, especially when standing up. High-frequency US (18-5 MHz) was performed with the patient standing. First, the probe was applied without any pressure. It demonstrated slightly hypoechoic subcutaneous cellular tissue -mainly fat lobules- protruding 4 to 5 millimeters into the slightly hyperechoic dermis (fig 1a), with no abnormal vascularization. Then we applied mild pressure with the probe, and the previously protruding tissue returned in the subcutaneous cellular tissue, like a reducible hernia (fig 1b). No other lesion was found, and the diagnosis of piezogenic papules was therefore confirmed.

Piezogenic papules are small herniations of fatty subcutaneous tissue in the dermis. On physical examination,

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they present as firm, yellowish to skin-colored papules on the heel and/or the ventral wrist (fig 1c, d), being more prominent when pressure is applied [1,2]. Usually asymptomatic, these lesions are common, with reported incidences as high as 76-86% in the general population [1]. The diagnosis can be made clinically, but high-frequency US can be used for confirmation if needed, demonstrating the herniated subcutaneous tissue in the dermis [3,4]. A biopsy is typically unnecessary.

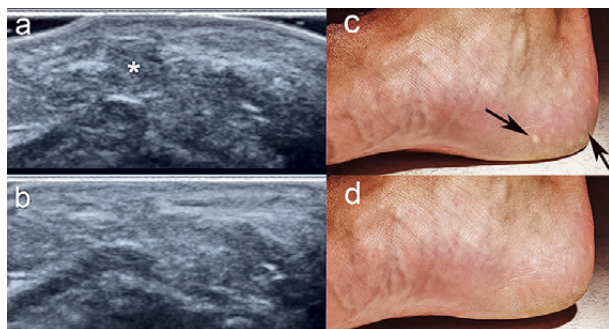


Fig 1. a) Grayscale ultrasound of the heel with no probe pressure showing a piezogenic pedal papule as a slightly hypoechoic subcutaneous cellular tissue (*) protruding 4.5 millimeters into the dermis (patient standing); b) Exerting mild pressure, the previously protruding tissue returned to its original compartment; c) Clinical appearance of skin-colored and yellowish papules (arrows) when patient is standing; d) Clinical appearance of the heel at rest (no ground contact).

Several risk factors have been identified (obesity, pes planus, prolonged periods of standing, athletes such as long-distance runners), and associations have been suspected with collagen disorders such as Ehlers–Danlos syndrome. Pedal papules occur at any age, and there is an unusual variant in non-weight-bearing infants [1]. As most patients do not experience pain, this condition is primarily a cosmetic concern. If the lesions are painful, conservative management (e.g., behavioral modification, weight loss, avoidance of prolonged standing) should be first considered, followed by compression stockings, heel cups and orthotics. More invasive techniques should be reserved for refractory cases [1].

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Occipital subcutaneous schwannoma diagnosed by ultrasound

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To the Editor,

A 28-year-old woman presented a lump under her occipital scalp more than 10 years ago, and the lump grew

gradually. Physical examination revealed a hard palpable mass below the occipital scalp with smooth skin on the surface, normal complexion, slightly pitiabile, and no redness, swelling, or tenderness (fig 1a). Ultrasound showed in the subcutaneous layer of the occipital region a hypoechoic fusiform tumor of 6.9x5.9x1.8 cm in size (fig 1b), with clear borders, a strong echoic envelope around the periphery, triangular hypermetropic caps at both ends of the long axis (fig 1c), uneven internal echo, small anechoic dark areas of unequal size and strong echoic separated light bands, enhanced posterior echo, and abundant blood flow signals, RI 0.73 (fig 1d). Ultrasound diagno-

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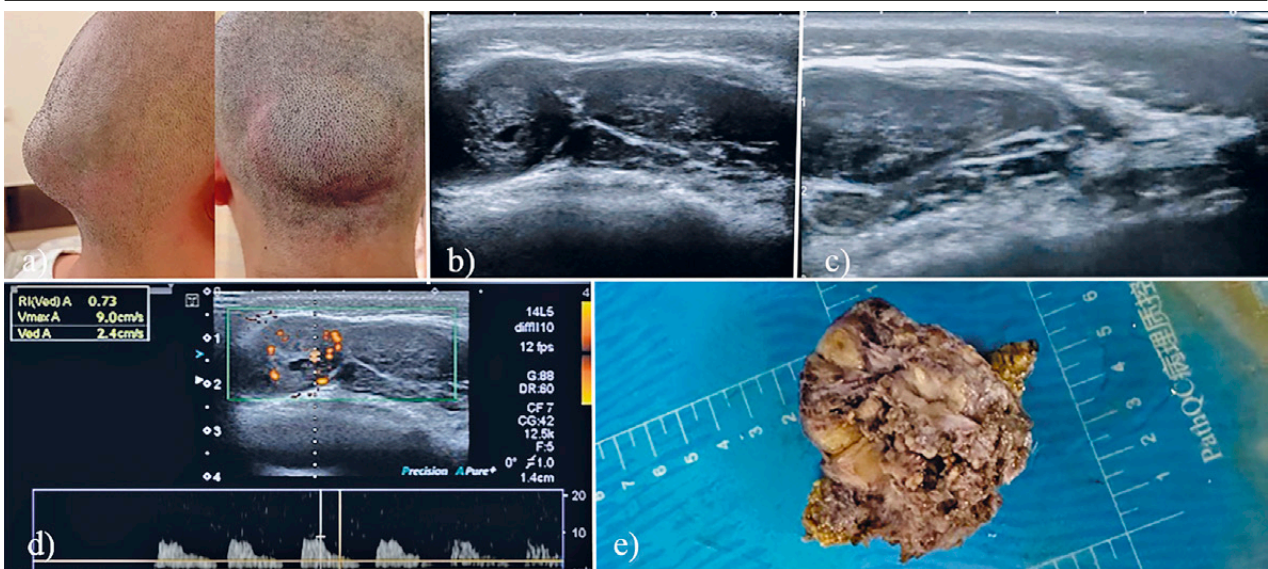


Fig 1. a) Physical examination of the occipital subcutaneous mass; b) Ultrasound imaging indicating a strongly echoic envelope around the mass, and an anechoic dark area is seen inside; c) hyperbolic caps at both ends of the mass; d) The resistance index obtained by color Doppler ultrasound; e) Excised tumor tissue with skin.

sis: occipital subcutaneous solid mass, neurogenic tumor. CT of the head showed a soft tissue density shadow in the occipital region and a circular liquid hypotension area. The patient underwent scalp mass resection (fig 1e), and the postoperative pathological diagnosis was schwannoma, immunohistochemistry: S-100(+), Ki-67 (about 1%).

Schwannomas arise from Schwann cells in the nerve sheath and tend to occur in the extremities such as the head, neck, and flexor sides [1]. Intracranial and extracranial schwannomas account for 0.5% of all head and neck tumors [2], and schwannomas that grow under the scalp are rarer. The typical ultrasound manifestations of this disease are that the mass is regular, round, oval, or fusiform, with clear borders, complete envelope, uneven hypotensive interior, irregular anechoic areas of different sizes can be seen in some masses, and posterior enhancement can be seen. The blood flow signal can be seen in the lesion, the arterial blood flow spectrum is mostly of the hyperobstructive type, and the “rat tail sign” or triangular hypermetropic cap connected to the nerve trunk

can be found at one or both ends of the edge of the long axis of the tumor [3], and the ultrasound characteristics of this case are consistent. This case can be confused with common subscales masses such as hemangiomas, epidermoid cysts, neurofibromas, etc., due to the extraordinary growth site and easy-to-solidify thinking, so attention should be paid to distinguishing them in future ultrasound examinations.

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Ultrasound examination for injury of the wrist extensor retinaculum

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To the Editor,

A 53-year-old woman had experienced a fall, resulting in contusion to her right dorsal wrist upon impact with the ground. Initially, she had had ecchymosis at the site of injury and had sought evaluation at an orthopedic clinic. Plain film imaging had revealed no fractures. Two months later, despite the disappearance of ecchymosis, she continued to experience discomfort and swelling over the right dorsal wrist, particularly during wrist flexion. Subsequently, she underwent an ultrasound examination which did not reveal any visible effusion. Initially, the transducer was placed in the axial plane to assess the right dorsal extensor compartments whereby no tenosynovitis or rupture of the extrinsic/intrinsic carpal ligaments at the distal radius level was seen. Upon repositioning the transducer between the lunate and capitate, diffuse thickening of the extensor retinaculum (ER) was observed, along with mild enlargement of the extensor digitorum communis compared to the contralateral side (fig 1A). In the longitudinal view, it was confirmed that the pathology was confined to the right ER without affecting the tendon sheath of the extensor digitorum communis (fig 1B).

The ER functions as a robust fibrous band, anchoring the extensor tendons on the dorsal aspect of the wrist.

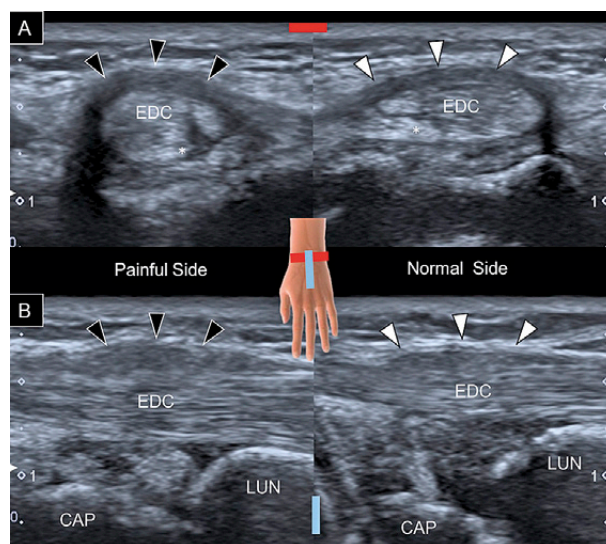


Fig 1. Ultrasound imaging of the injured (black arrows) and normal (white arrows) retinacula in the axial (A) and longitudinal (B) planes. The colored squares indicate the transducer's position. EDC, extensor digitorum communis; asterisk, extensor indicis proprius; CAP, capitate; LUN, lunate.

It extends diagonally from the radial side, near the base of the wrist to the ulnar side towards its end, preventing bowstringing of the finger extensor tendons [1]. As the finger extensor tendons approach and traverse the wrist, they are encased by synovial sheaths derived from the external layer of each tendon. These sheaths pass through fibro-osseous tunnels formed by the ER at the level of the distal radioulnar joint, arranged into six discrete anatomical compartments [2].

The central portion of the retinaculum, housing the fourth compartment of the wrist extensors, is especially prone to contusion injuries – particularly during extreme wrist flexion. When evaluating patients with suspected ER injury, the standard practice involves utilizing ul-

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trasound to assess the finger/wrist extensors around the distal radioulnar joint. However, it is advisable to extend the scanning range to encompass the second carpal row [3]. This broader examination is essential due to the diagonal trajectory of the ER, which may extend dorsally to involve the hamate bone on the ulnar side. This case illustrates an overlooked cause of dorsal wrist pain following trauma and emphasizes the utility of ultrasound in precisely identifying the pathology.

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Recurrence of cardiac myxoma three decades after first extraction – never say never

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To the Editor,

A 39-year-old woman, operated for sporadic right atrial myxoma at the age of 7, was referred for transthoracic echocardiography (TTE) because of fatigue, dyspnea, palpitations and elevated NT-proBNP values. After the operation, she was regularly monitored at 2-year intervals. She had her last echocardiographic examination at the age of 22.

TTE revealed an oval solid mobile mass, approximately 45x35 mm, in the right ventricular outflow tract with prolapse into the pulmonary valve (fig 1a, b), slightly increased right ventricular diameter and moderate tricuspid regurgitation. Magnetic resonance imaging confirmed the mass attached to the interventricular septum; the mass was isointense on T1-weighted imaging and hyperintense on T2-weighted imaging, with peripheral en-

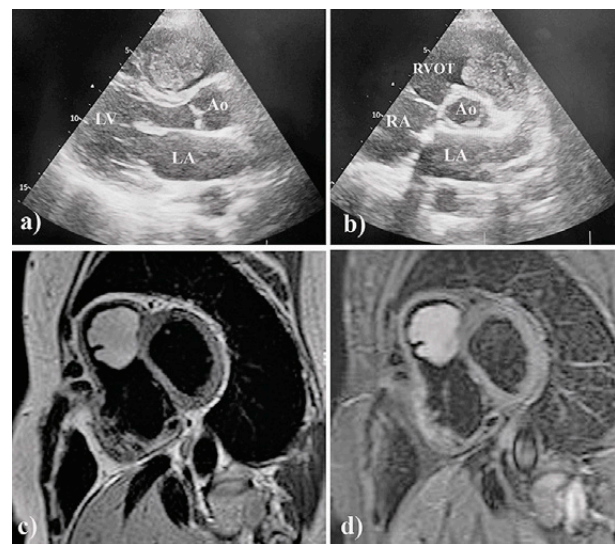


Fig 1. Characteristic manifestation of the mass revealed by transthoracic echocardiography (a and b) and magnetic resonance (c and d) with high probability suggesting cardiac myxoma. LA – left atrium, LV – left ventricle, Ao – aorta, RVOT – right ventricular outflow tract

hancement on late gadolinium imaging (fig 1c, d). Pathohistological analysis of the removed mass confirmed the presumed diagnosis of cardiac myxoma (CM).

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The vast majority of CM are sporadic and occur in the left atrium, more often in women between the ages of 40-60 [1]. Only about 7.5% of these tumors arise in the right atrium and up to 2.5% in the right ventricle [1]. Inherited forms (Carney complex and familial myxomas) are very rare and should be considered if myxoma occurs in young persons, especially in case of unusual location [1].

Recurrence of sporadic CM is about 5% and can occur within several months to several years after initial surgical excision (most are found within the first 4 years). The reasons for recurrence are inadequate resections, intraoperative implantation of tumor parts and multicentric location of the tumor [1]. Searching the literature, we found no data on the recurrence of sporadic myxoma 3 decades after surgery.

In the presented case, the absence of a hereditary component, the time elapsed since the removal of the first CM and the still different localization, with a high probability to eliminate a direct connection between the first and second (recurrent) myxoma are crucial. The possible

mechanism of this unexpected and extremely late recurrence is non-hereditary multifocal genesis.

It is obvious that in young patients with sporadic myxoma, recurrence is possible even decades after surgical removal. Since CM grows on average 0.24-1.6 cm per year, recurrence of this benign but potentially fatal disease can be detected at an early stage by echocardiographic monitoring [1,2]. In this context, this widely available, non-invasive and inexpensive method should be used decades after surgery, even in patients with a history of non-hereditary myxoma at intervals of at least four years [2].

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An atypical case of pediatric anaplastic lymphoma kinase-positive anaplastic large cell lymphoma limited to the skin on chest wall detected by ultrasound

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To the Editor,

The parents of a 3-year-old boy noticed the presence of a nodule on his chest wall 11 days prior to presentation. The nodule did not present redness, swelling, ulceration or pus formation. Upon physical examination, it was mobile and had a smooth texture with well-defined boundaries and good resilience. Ultrasound (US) examination

revealed a heterogeneously hypoechoic nodule measuring 17x9x13mm in size with shallow lobulated features and posterior acoustic enhancement in the subcutaneous layer. Color Doppler flow imaging (CDFI) showed absence of vascularity within the nodule. Additionally, there were some anechoic lymph nodes surrounding the nodule which exhibited clear boundaries and portal blood flow in the intercostal space (fig 1). Subsequently, surgical excision of the mass was performed. Histological and immunohistochemical analysis confirmed a diagnosis of anaplastic lymphoma kinase (ALK) positive anaplastic large cell lymphoma (ALCL). Bone marrow cytology and PET/CT scans did not reveal any evidence of systemic dissemination; only axillary lymph nodes exhibited high levels of glucose metabolism. Finally, it was determined that the boy presented with ALK-positive ALCL manifesting as a solitary cutaneous tumor on his

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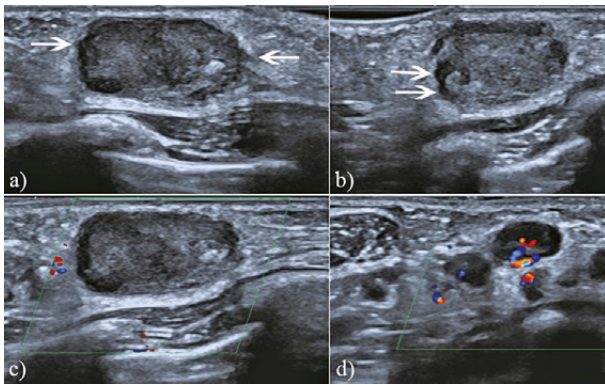


Fig 1. a) Longitudinal section of the nodule by ultrasound: shallow lobulated sign (white arrows); b) transverse section of the nodule: shallow lobulated sign (white arrows); c) color Doppler ultrasound of the nodule; d) color Doppler ultrasound of the nearby lymph nodes.

chest wall. He then underwent chemotherapy treatment which resulted in significant improvement.

Pediatric primary cutaneous ALK-positive ALCL is extremely rare, with a significant proportion of cases being negative for ALK, while more than 90% of pediatric systemic ALCL cases show positive ALK expression [1]. US is the preferred imaging modality for evaluating superficial masses, so it is crucial to enhance the precision of US diagnosis of superficial lymphoma, although it can

be challenging [2]. Certain US characteristics are widely recognized as typical features of intranodal lymphomas, including well-defined borders, markedly low internal echogenicity with minimal liquefaction or calcification tendencies, abundant nonlymphoid portal blood signals. Interestingly, in our case, CDFI showed a lack of blood supply within the tumor due to confirmed internal necrosis observed through pathological findings. Consequently, fast-growing tumors may experience less frequent occurrence of liquefaction and calcification alongside reduced intensity of blood flow signals. In addition, a shallow lobulated sign instead of the typical clear borders seen in most cases may also appear. Truffle sign is a new potential suspicious ultrasound sign that can suggest malignant lymphadenopathy in children [2].

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Fetal cerebral arteries in a new ultrasonographic perspective

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To the Editor,

A 30-year-old pregnant woman presented for a routine second-trimester obstetric ultrasound scan at 23 weeks

and 5 days gestation without maternal or fetal risk such as fetal growth restriction, hypertensive disorders of pregnancy, gestational diabetes, amniotic fluid volume abnormality, and chromosomal abnormalities. On 2-dimensional (2D) ultrasound using the transabdominal probe (RM7C, GE Healthcare), all fetal anatomical structures appeared normal within the gestation. A 3-dimensional (3D) SlowflowHD scan of the cerebral artery was obtained by coronal occipito-anterior acquisition, a nonconventional section, which revealed a novel 3D impression of the cerebral arteries (fig 1).

Recently, a new Doppler technology named SlowflowHD has been introduced for detection the low flow

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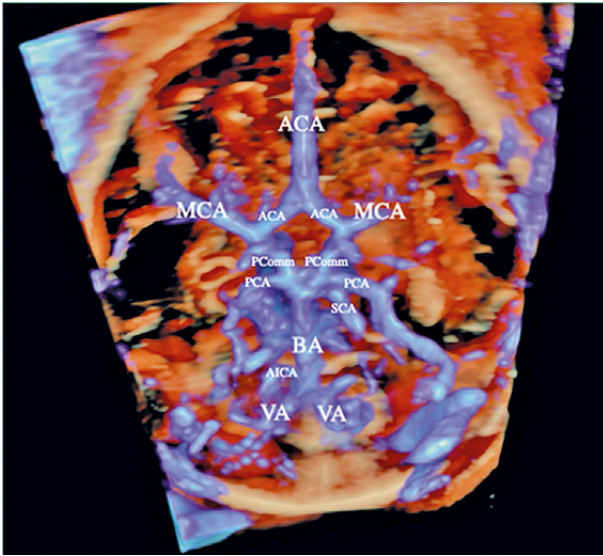


Fig 1. Transoccipital scan performed at 23 weeks' gestation using three dimensional SlowflowHD in the coronal plane: the basilar artery and circle of Willis of the fetal brain is displayed. The image was obtained using a transabdominal volumetric 2–8 MHz probe. ACA: anterior cerebellar artery; AICA: anterior inferior cerebellar artery; BA: basilar artery; MCA: middle cerebellar artery; PCA: posterior cerebral artery; PComm: posterior communicating artery; SCA: superior cerebellar artery

velocities of smaller fetal vessels, characterized by high-display frame rate, high-resolution, and good sensitivity for fetal peripheral vessels. There have been reports on 2D/3D SlowflowHD features of fetal cerebral arteries [1,2]. Three-dimensional SlowflowHD is able to provide direct visualization of the cerebral arteries by scanning from occipito-anterior position. We consider that this new Doppler technique provides a novel ultrasonographic perspective for fetal basilar artery. It permits an extended visualization of the fetal cerebral arteries and evaluation of the development of fetal brain vessels in detail. This is important considering that the adult cerebral angioarchitecture is associated with its origin in embryologic development.

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Unexpected finding: a patient with choledocholithiasis found mass at the lower end of common bile duct

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To the Editor,

A 65-year-old female patient was admitted to hospital with choledocholithiasis. Computed tomography (CT)

examination showed that the patient had multiple stones in the common bile duct with no other abnormalities. We actively prepared our patients for ERCP.

Endoscopic ultrasound (EUS) is routinely performed for such patients in our department. We found multiple strong echoes in the patient's common bile duct and a hypoechoic lesion in the lowest part of the common bile duct. At first, we thought that the lesion was an inflammatory lesion caused by stones. Doppler ultrasound showed that the lesion was lacking blood supply. We could not determine the nature of the patient's lesion, so we chose to perform EUS-FNA with 22G needle. We applied Rapid On-Site Evaluation (ROSE) technique and found a large

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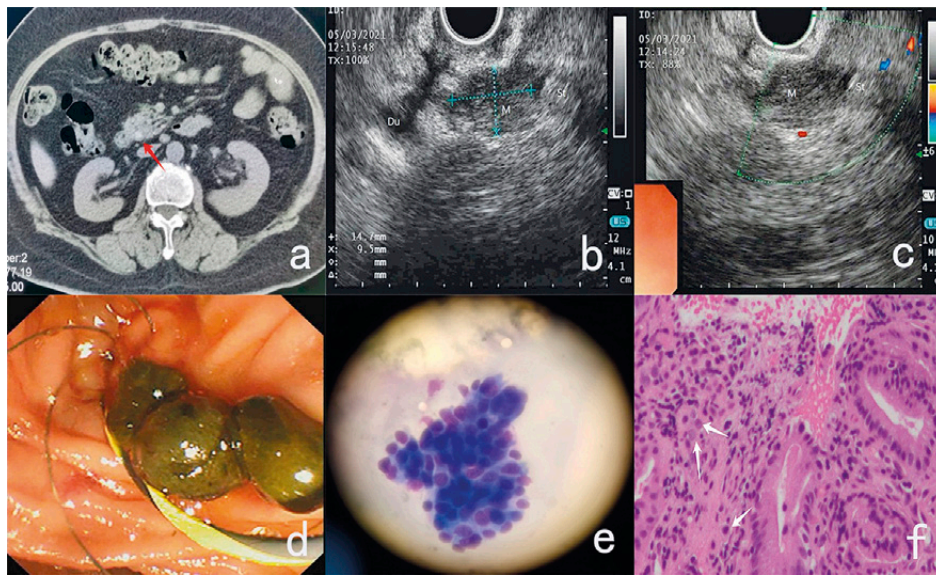


Fig 1. a) CT examination showed high density at the lower end of the common bile duct, indicating stone (red arrow); b) endoscopic ultrasound found the lesion, which was 14.7x9.5 mm in size; c) Doppler ultrasound found no vessel inside the lesion; d) the stones were endoscopically removed; e) a large number of cells and cell atypia can be seen under the microscope with the aid of ROSE technique; f) the histopathological images showed a large number of cell atypia, which were intraepithelial tumor cells (white arrows).

number of cells under the microscope, while some of the cells were pleomorphism. The histopathology obtained was sent to the Department of Pathology for identification. Considering the presence of choledocholithiasis in the patient, ERCP was performed to remove the patient's stones. We received the histopathological results three days later. It's revealed that tumor cells were visible in the epithelium, consistent with high-grade intraepithelial neoplasia (fig 1). We then performed pancreaticoduodenectomy.

Whether EUS is a routine examination before ERCP, here we give our answer. Since conventional ERCP cannot find some unexpected lesions, EUS before ERCP can better clarify the surgical indications of ERCP and avoid the missed diagnosis of some other mass lesions, so as not to delay the timely diagnosis and treatment of patients [1,2]. EUS-FNA can help us obtain the histopathology of accidentally discovered lesions. At the same time, ROSE technique can help us to better evaluate the puncture effect [3,4]. We suggest EUS examination be-

fore ERCP, and we can apply EUS-FNA and ROSE technique to assist our diagnosis and treatment if necessary. We hope you can share our recommendation.

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A case of alveolar soft tissue sarcoma detected by ultrasound examination

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To the Editor,

A 32-year-old female patient presented with a painful one-year history of a back mass, which had recently increased significantly (diagnosed as a benign tumor in a local hospital). Physical examination revealed a mass on the left back below the scapula, protruding from the skin surface, without redness or skin ulceration, with a slightly soft texture to palpation and pain upon applying pressure. Ultrasound showed an 8x34x23 mm tumor in the left latissimus dorsi muscle, with clear boundaries, irregular shape, local angulated, lobulated, hypoechoic but with uneven internal echo and cord-like hyperechoic separation. A strip-like blood flow signal was seen in the mass, showing an arterial blood flow spectrum, with the highest flow velocity of 35 cm/s and resistive index of 0.75. As the suspicion was of a malignant lesion, the tumor was resected under general anesthesia. The pathological result was alveolar soft tissue sarcoma (fig 1). The patient continued chemotherapy and died of lung and liver metastasis and multiple organ failure one year later.

Alveolar soft-tissue sarcoma is a rare but distinct clinical and histopathological malignancy of the soft tissue that is named for the microscopically irregular acinar cavities formed by the tumor cells. The tumor is more common in adolescents and young females aged 15-35 years, and the proportion of females being about 51-65% [1]. The main sites of the disease are the trunk and limbs, especially the deep muscles of the lower limbs. In children, it is more common in the orbit, tongue, neck and other parts. It is generally a slow-growing painless mass, rarely causing dysfunction, and the tumor is rich in blood

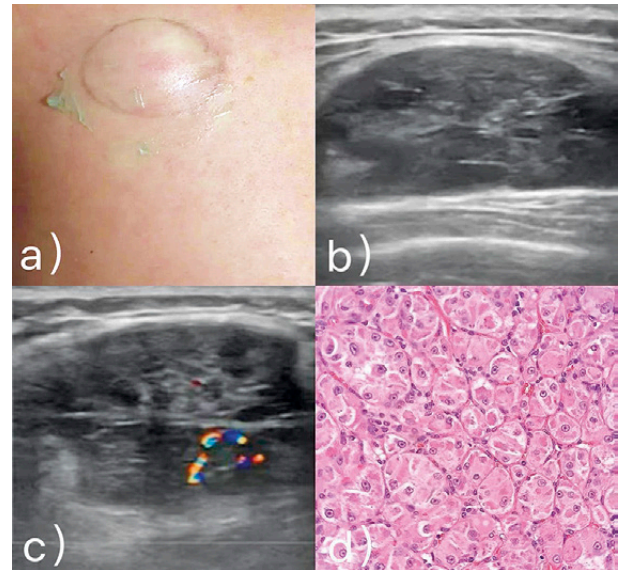


Fig 1. a) A mass under the scapula on the left back protruded from the skin surface without redness or ulceration; b) The hypoechoic lesions were located in the muscular layer, with clear boundary, lobulated shape, and cord-like hyperechoic septations; c) Streaks of blood flow signals were seen in the mass; d) Microscopically, the tumor cells formed irregular acinar cavities.

vessels. This tumor is prone to early metastasis, the metastasis rate being 50%; the main metastatic site is lung, followed by brain, bone and liver, and some patients present with lung or brain metastasis as the first symptom [2]. On ultrasound assessment, the tumor is usually large, with clear edges and heterogeneous hypoechoic aspect; necrosis liquefaction area may appear. Color Doppler shows abundant blood flow signals around and inside the tumor, showing high-speed and high-resistance arterial blood flow spectrum. The main difference between this tumor and other malignant tumors is the clear boundary that is maintained for long time. At present, surgical resection is the first choice for the treatment, and the long-term efficacy of radiotherapy and chemotherapy is poor. Molecular targeted drugs, especially anti-angiogenic drugs, have a significant effect on this disease.

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Lung ultrasound manifestations of right lung squamous cell carcinoma with iodine-125 seeds implantation

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To the Editor,

Ultrasound can detect peripheral lung cancers located close to the pleura. Iodine-125 seeds implantation is a low-dose-rate brachytherapy procedure used for lung cancer treatment [1]. In such cases, special signs can be identified using lung ultrasound.

A 73-year-old male was admitted to the Department of Ultrasound for an abdominal ultrasound. During examination, we detected an area of consolidation in the right lower lobe of the lung (near the liver), and multiple strong echoes could be found inside (fig 1a, b). Usually, unstable strong echo is a common sign in lung consolidation due to pneumonia, which was artifact due to residual gas. However, unlike pneumonia, the strong echoes in this case were solid and posteriorly accompanied by comet-tail artifact. Through communication with the patient, we found that he is known to have a medical history of right lung cancer and had undergone seed implantation therapy. We interpreted the lung consolidation with internal strong echoes possibly as a lung cancer lesion and seed implantation.

We contacted the Department of Radiology to obtain the patient's recent CT images (fig 1c), and we found

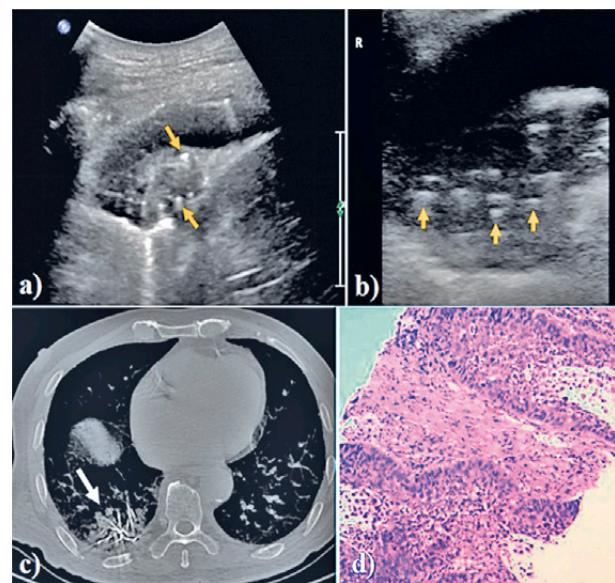


Fig 1. a) and b) Ultrasound aspect of the right lung squamous cell carcinoma with iodine-125 seeds implantation (yellow arrow), with visible comet-tail artifacts behind seeds (blue arrow); c) CT scans of right lung squamous cell carcinoma with iodine-125 seeds implantation (white arrow); d) Focal keratinized cancer cells can be seen in the nest of cancer cells, with cytoplasmic red staining (HE×40).

that the CT showed the location of the patient's lung cancer and the seed inside, which were consistent with what we saw in ultrasound. We reviewed the patient's medical records after examination and found that his right lower lobe histopathological tissue specimen suggested invasive carcinoma. Immunohistochemical staining: CK7 (-), TTF-1 (-), NapsinA (-), P63 (+), P40 (+), CK5/6 (+), Ki-67 (approx. 40%+) (fig 1d). Diagnosed

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with moderately differentiated squamous cell carcinoma (cT2aN2M0, stage IIIA). The patient underwent radioactive iodine-125 seed implantation 4 months ago (50 capsules in total).

There are various reasons for lung consolidation signs displayed on ultrasound such as lobar pneumonia, atelectasis, lung tumors, etc. [2]. When there is a strong echo inside the consolidation, we should move the probe appropriately. If the strong echo shape is unstable, it should be considered as gas artifacts, which are related to the uneven absorption of gas in the alveoli. However, If the strong echo morphology is stable, it should be considered

as a foreign object and diagnosed in combination with medical history.

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