Ventral Wrist Tumor with Numbness of the Fingers

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Case

A 30-year-old woman complained of a gradually enlarging mass over the right ventral ulnar wrist in the last 2 years. In addition, she was also experiencing a tingling sensation over the ulnar half of the right palm, on the right ring and little fingers in the past 6 months. She denied trauma of the right hand or diagnosis of rheumatologic diseases before this visit. She neither felt pain over the mass nor complained of weakness over the right hand. A physical examination revealed a nonmobile, solid tumor, measuring 3 cm × 2 cm in size, over the right ventral wrist, near the flexor carpi ulnaris tendon. The muscle strength of the flexor and intrinsic muscles of the right hand was normal, but she had hypoesthesia of the ulnar side of the right palm, the ulnar half of the ring finger, and the little finger of the right hand. The musculoskeletal ultrasound examination was performed with a 12-MHz linear transducer, and a power Doppler mode examination was also carried out.

Fig. 1 Longitudinal scan along the right ulnar bone showing a fusiform, well-circumscribed, noncompressible, hypoechoic, and heterogenic mass (arrows) with posterior enhancement, and the mass was continuous with the right ulnar nerve (arrowheads).

Fig. 2 Color Doppler ultrasound image showing hyperemia within the mass.

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Interpretation

Fig. 1 shows a longitudinal scan along the right ulnar bone. There was a fusiform, well-circumscribed, noncompressible, hypoechoic, and heterogenic mass (arrows) with posterior enhancement, measuring \(15.5 \text{ mm} \times 9.6 \text{ mm} \times 12.9 \text{ mm}\), over the right ventral wrist. The mass was continuous with the right ulnar nerve (arrowheads). Fig. 2 shows a color Doppler ultrasound image. A hyperemia within the mass can be seen in the image. Fig. 3 shows a transverse scan of the ventral wrist. The mass was lateral to the right flexor carpi ulnaris tendon, medial to the right ulnar artery, and superficial to the right pronator quadratus muscle.

The impression of sonographic findings was a schwannoma of the right ulnar nerve. Surgery was arranged, which revealed a single mass encapsulating the right ulnar nerve. Pathological analysis confirmed a schwannoma. The final diagnosis was a schwannoma of the right ulnar nerve, which could explain the clinical manifestations of numbness over the ulnar half of the right palm, ulnar half of the ring finger, and the little finger of the right hand. Using ultrasound, we correctly diagnosed the nature of tumor, and the relations to its parent nerve.

The hallmark of sonographic findings of neurogenic tumors is their continuity with a peripheral nerve [1–3]. The mass usually exhibits a fusiform shape, and is oriented longitudinally in the nerve distribution, with tapering ends connected to the peripheral nerve [4]. Hypoechoic appearance and hypervascular patterns are often found among them [4]. Neurogen tumors could be categorized into malignant and benign origins. The most common malignant neurogenic tumor was malignant peripheral nerve sheath tumor, while the benign neurogenic tumors mainly comprise neurofibroma and schwannoma (neurilemmoma) [1,2]. Ultrasound could not distinguish between benign and malignant neurogenic tumors, but tumors with larger size (>5 cm), poorly demarcated margin, calcification, and central necrosis were considered to be of malignant origin [5]. Differentiating between neurofibroma and schwannoma relies on the final pathology report. Nevertheless, schwannomas are generally encapsulated, with cystic lesions, and are positioned eccentrically to the affected nerve segment, whereas neurofibromas do not contain capsules and are often positioned centrally to the affected nerve segment [5,6].

Ultrasound could evaluate the characteristics of soft-tissue tumors, and determine their anatomical relations to the surrounding structures, such as nerves and vessels [4]. Thus, ultrasound contributes in diagnosing soft-tissue tumors, and also in assisting preoperative planning regarding the relationship of the tumor to adjacent neurovascular structures [7].

References