Ultrasound Identification of Autoimmune Brachial Plexopathy: A Case Report

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CASE INTRODUCTION

62-yr-old male with progressive atrophy of left-hand intrinsic muscles and weakness of the upper limb.

CASE DESCRIPTION

An ultrasound examination was requested to determine potential ulnar nerve entrapment in the context of generalized peripheral neuropathy after inconclusive electrophysiologic testing. He presented with a two-decade history of progressively worsening atrophy and weakness of the left upper limb with paresthesia in the ulnar aspect of the hand and forearm. He had extensive prior imaging and electrophysiologic testing as well as decompressive surgeries of the median nerve at the wrist, ulnar nerve at the elbow, as well as multi-level cervical fusion, all without substantial improvement.

On examination he showed marked atrophy and profound weakness of the ulnar and median innervated hand intrinsic muscles and radial innervated finger extensors on the left. He displayed mild hand intrinsic weakness on the right and partial sensory disturbance in the left medial hand and forearm.

High frequency ultrasound was performed of the bilateral brachial plexus as well as the median and ulnar nerves in the upper limbs. There was marked enlargement of the C7, C8, and T1 roots of the brachial plexus as well as the median and ulnar nerves at the axilla on the left side more than the asymptomatic right side. The cross-sectional areas were as high as 60 mm2. There was also focal enlargement of the left ulnar nerve at the elbow with hypermobility. It was concluded that the patient displayed findings more consistent with chronic inflammatory demyelinating polyneuropathy (CIDP).

ULTRASOUND IMAGES

Figure 1

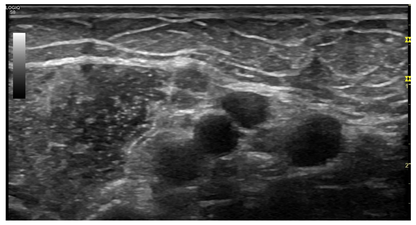

Figure 1 demonstrates a short-axis view of the branch level of the brachial plexus. Significant fascicular enlargement is shown.

Figure 2

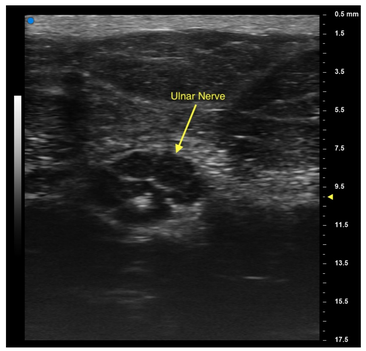

Figure 2 shows a short-axis view of the ulnar nerve with markedly enlarged fascicles.

Figure 3

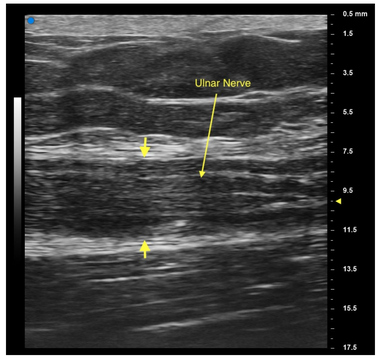

Figure 3 shows a long-axis view of the enlarged fascicles of the ulnar nerve.

DISCUSSION

CIDP is an immune-medicated neuropathy typically diagnosed by clinical presentation and electrophysiological testing. The evidence for the diagnostic utility of ultrasound in CIDP continues to strengthen, particularly in those that do not meet the electrodiagnostic criteria. Ultrasound imaging showing enlargement of proximal median nerve segments and brachial plexus differentiates chronic inflammatory neuropathies from axonal neuropathies and motor neuron disease.

In this case, ultrasound allowed for distinction of a clinical pattern similar to left C8 radiculopathy, but was more suggestive of CIDP. Furthermore, identification of dynamic subluxation of the ulnar nerve at the elbow over an irregular epicondyle with focal enlargement allowed recognition of a focal entrapment within the context of a more generalized peripheral neuropathy. Despite a clinical appearance or cervical radiculopathy, it was determined that the source of his profound weakness in the predominantly C8-innervated muscles was related to the more generalized process.

CONCLUSION

High frequency ultrasound is an effective modality for evaluating soft tissue pain around the elbow, including focal nerve entrapments. The point-of-care nature of ultrasound has distinct advantages over other imaging modalities used to aid in the diagnosis of autoimmune brachial plexopathies. In this case, ultrasound allowed for dynamic visualization of extremities both distally and proximally, with simultaneous correlation of the findings to the clinical examination.

REFERENCES

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