Peripheral neuropathy diagnosis

Electrophysiological studies are the main stay for the diagnosis of peripheral neuropathies. However, direct visualization of the nerves is possible with exact localization of site of pathology with high resolution ultrasonogram and 3 Tesla MRI scanner, and newer MR sequences.

see F wave reponse.

Garg et al. did a cross sectional study including a total of 55 patients and 64 nerves with upper limb peripheral neuropathies. All the included patients underwent high resolution focused ultrasound of the nerves and MR neurography. Nerve Conduction Velocity study was done for reference.

The diagnostic confidence of TSE T2W MR sequence was seen to be highest with a sensitivity of 95.31% while it was 81.25% for ultrasonogram. Continuity of the nerve in patients with traumatic neuropathy was seen in 65.7% and 62.86% (22/35) nerves on MRI and ultrasonogram respectively. T1W and T2W MR sequences were seen to be equally effective in establishing the continuity of the nerve. Increase in the calibre/ thickening was seen in 77% of cases on MRI, and 73.8% of cases on USG. Neuroma formation was seen equally on both MR & USG in 60.66%. We consistently found low fractional anisotropy (FA) values at the site of pathology.

Ultrasound is a sensitive technique to diagnose peripheral neuropathies and it should be used as a screening modality for a focused MR to be performed later. TSE T2W FS has the highest sensitivity to pick nerve pathology and is comparable to NCS. Amongst the newer sequences, DTI should be done to increase the diagnostic confidence [1].

1)
Garg K, Aggarwal A, Srivastava DN, Jana M, Sharma R, Gamanagatti S, Kumar A, Kumar V, Malhotra R, Goyal V, Garg K. Comparison of different sequences of MRI and Ultrasongram with Nerve Conduction Studies in peripheral neuropathies. World Neurosurg. 2017 Aug 22. pii: S1878-8750(17)31355-4. doi: 10.1016/j.wneu.2017.08.054. [Epub ahead of print] PubMed PMID: 28842238.