

## Seeing the blocks: MRI of the brachial plexus in multifocal motor neuropathy

### CASE SUMMARY

A 45-year-old man presented with 3 months of progressive right hand weakness. Examination showed mild atrophy and weakness of the right hand, and absent tendon reflexes. Cerebrospinal fluid contained 0.42 g/l protein (normal <0.45) and 1 lymphocyte/mm<sup>3</sup>. Electrodiagnostic studies revealed a multifocal motor neuropathy (MMN) with partial conduction blocks and severe denervation in the muscles of the right hand (figure 1). Sensory nerve conduction studies were normal. Charcot–Marie–Tooth disease, distal demyelinating polyneuropathy associated with monoclonal gammopathy, Lyme disease, lymphoma and malignant plasma cell dyscrasia were excluded using relevant biological, electrophysiological and genetic studies.<sup>1</sup> The search for IgM anti-ganglioside GM1 (anti-GM1) antibodies using ELISA was positive. Coronal short tau inversion recovery MRI assessment of the brachial plexus demonstrated diffuse enlargement and abnormally high signals in the right brachial plexus (figure 1). The patient was diagnosed with definite MMN based on the European Federation of Neurological Societies/Peripheral Nerve Society guidelines and treated with intravenous immune globulin for 6 months.<sup>2</sup> Right hand strength gradually improved.

MRI assessment of brachial plexus in MMN usually demonstrates swelling and increased signal intensity.<sup>3</sup> The increased signal intensity is believed to be due to demyelination, while inflammation and oedema might lead to swelling in nerves.<sup>3</sup> In a few cases, high signal intensity has been shown to co-localise with conduction block in the brachial plexus and in the forearm segment of the arm.<sup>4–5</sup> MRI is considered to be of help to

differentiate MMN from lower motor neuron disease, with brachial plexus MRI being normal in the latter.<sup>1</sup>

In our patient, MRI abnormalities corresponded exactly with the symptoms and with partial conduction blocks.

**Andoni Echaniz-Laguna,<sup>1</sup> Jean-Louis Dietemann<sup>2</sup>**

<sup>1</sup>Département de Neurologie, Hôpitaux Universitaires, Strasbourg, France;

<sup>2</sup>Département de Radiologie, Hôpitaux Universitaires, Strasbourg, France

**Correspondence to** Andoni Echaniz-Laguna, Département de Neurologie, Hôpital Civil, BP 426, 67091 Strasbourg, France; andoni.echaniz-laguna@chru-strasbourg.fr

**Competing interests** None.

**Patient consent** Obtained.

**Ethics approval** This study was conducted with the approval of the Strasbourg University Hospital Ethics Committee.

**Provenance and peer review** Not commissioned; externally peer reviewed.

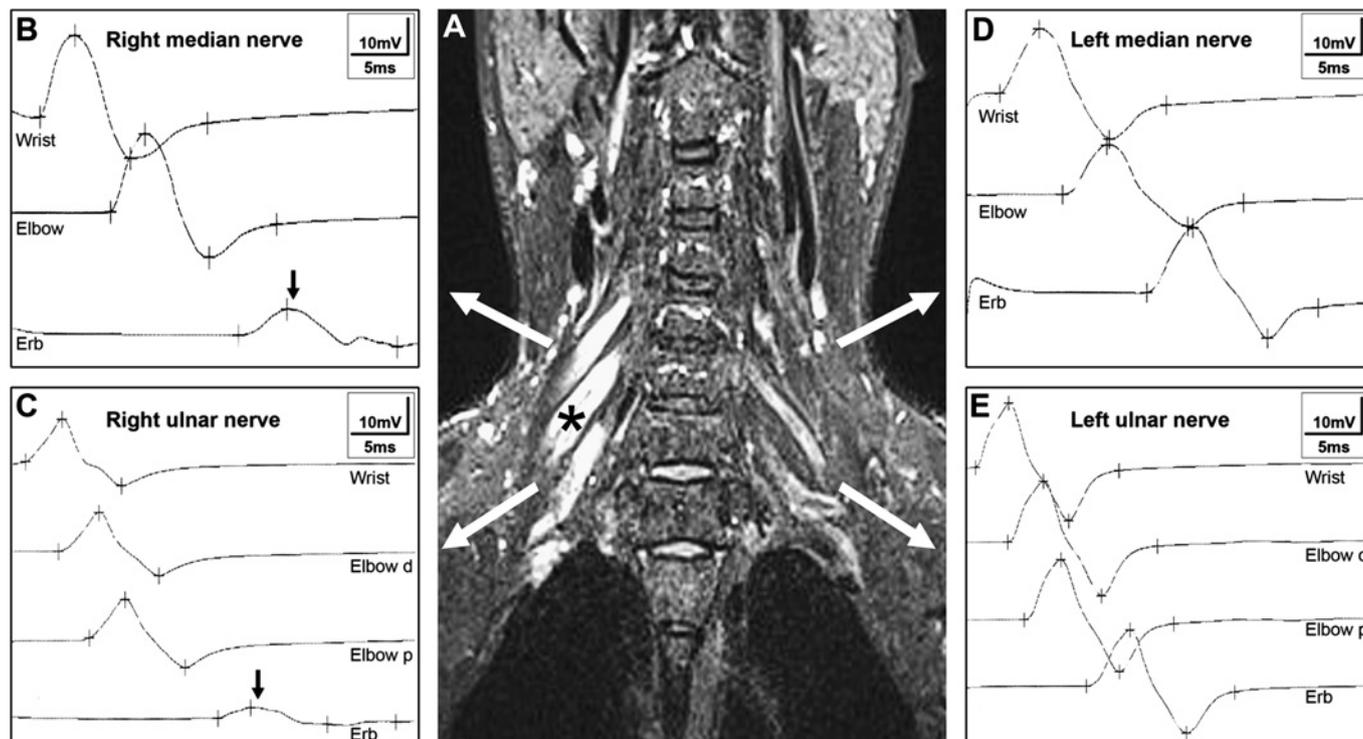
Accepted 1 March 2011

Published Online First 22 March 2011

*J Neurol Neurosurg Psychiatry* 2011;**82**:728. doi:10.1136/jnnp.2010.239210

### REFERENCES

1. van Hasseldonk JTH, Franssen H, van den Berg-Vos RM, *et al*. Multifocal motor neuropathy. *Lancet Neurol* 2005;**4**:309–19.
2. Joint Task Force of the EFNS and the PNS. European federation of neurological societies/peripheral nerve society guideline on management of multifocal motor neuropathy. Report of a joint task force of the European federation of neurological societies and the peripheral nerve society—first revision. *J Peripher Nerv Syst* 2010;**15**:295–301.
3. van Es HW, van den Berg LH, Franssen H, *et al*. Magnetic resonance imaging of the brachial plexus in patients with multifocal motor neuropathy. *Neurology* 1997;**48**:1218–24.
4. Parry GJ. AAEM case report 30: multifocal motor neuropathy. *Muscle Nerve* 1996;**19**:269–76.
5. Kaji R, Oka N, Tsuji T, *et al*. Pathological findings at the site of conduction block in multifocal motor neuropathy. *Ann Neurol* 1993;**33**:152–8.



**Figure 1** (A) Coronal short tau inversion recovery MRI demonstrates diffuse enlargement and abnormally high signals at the level of the trunks in the right brachial plexus (asterisk). Electrodiagnostic studies reveal partial conduction block in the right median and ulnar nerves, localised between the elbow and Erb's point (B, C; black arrows). No blocks are observed in the left median and ulnar nerves (D, E).