Cranial-Onset Axonal Neuronopathy: A Rare ALS Mimic

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Case presentation

53-year-old man reported left orbital numbness two years prior, progressively involving as hypoesthesia of the oral mucosa, anterior tongue and later of left hand. Dysphagia and dysarthria subsequently emerged associate to weight loss and generalized fatigue.

Investigations and Diagnosis

Clinical evaluation proved dysarthria, nasal voice, hypoesthesia of left upper hemiface, oral mucosa, tongue and left hand. Muscle strength testing revealed weakness in neck flexion/extension, shoulder abduction, elbow flexion/extension, wrist flexion/extension, and thumb abduction of 4/5(MRC score). There was mild hypotrophy of bilateral first dorsal interosseous muscles. The strength in other muscles was normal.

Fasciculations in deltoid, first dorsal interosseous and gastrocnemius muscles were observed.

Electrophysiological studies demonstrated markedly reduced sensory action potential amplitudes in the left median, ulnar and radial nerves, with chronic neurogenic changes in the right tibialis anterior, right first dorsal interosseous and left gastrocnemius muscles.

Blink reflex testing showed absence of R1–R2 trigemino-facial responses, confirming trigeminal involvement, while somatosensory evoked potentials indicated impaired pathways with prolonged central motor conduction times.

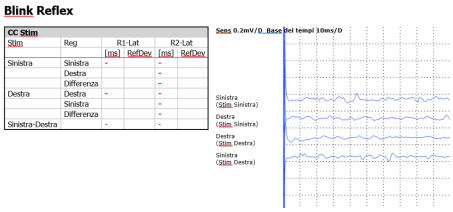

Figure 1. Blink reflex Complete absence of R1–R2 responses bilaterally, confirming trigeminal involvement. This electrophysiological hallmark is highly atypical for ALS and strongly supports FOSMN diagnosis.

MRI revealed medullary bulb atrophy and diffuse spinal cord thinning without contrast enhancement. A dedicated brachial plexus MRI disclosed asymmetric thinning of the left plexus from the roots to the axilla, without evidence of edema or pathological enhancement.

CSF analysis was unremarkable, with normal cytology, no oligoclonal bands and negative markers of neurodegeneration.

Serological testing revealed positivity for anti-ganglioside GM2 IgM antibodies, while whole-body CT excluded systemic neoplasms.

These findings supported a diagnosis of facial onset sensory and motor neuronopathy also called FOSMN syndrome [1-2]

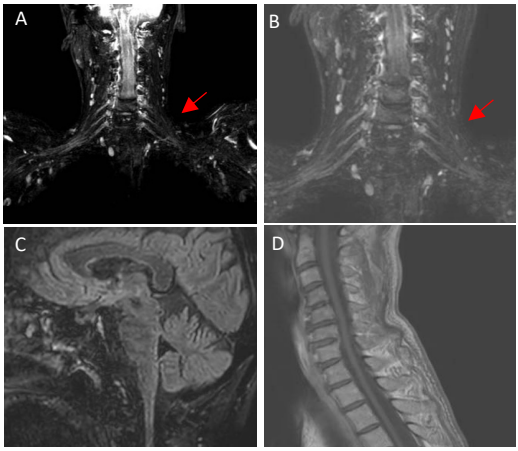

Figure 2. MRI findings: (A–B) marked thinning of the left brachial plexus compared to the contralateral side, without contrast enhancement. **(C–D)** Medullary bulb atrophy and diffuse spinal cord thinning, reinforcing axonal neurodegenerative involvement beyond motor neurons.

Therapeutic Management and Follow-up

According to literature.[2], the patient received intravenous immunoglobulin (IVIg). Treatment was well tolerated, with no adverse events. Nutritional support with protein puddings was also introduced to counteract weight loss, with subjective benefit reported by the patient. At one-month outpatient follow-up, the clinical condition remained stable without further progression.

Discussion and conclusion

FOSMN is a rare syndrome characterised by progressive, asymmetrical motor neuron disease and sensory involvement, which usually begins in the face. Reduction or absence of corneal reflexes, neurophysiological findings including low SNAP amplitudes in the upper limbs, and delayed or absence of R2 response of blink reflex are considered the main features of this syndrome (2).

Recognizing ALS mimics is essential to avoid misdiagnosis. Our case highlights the diagnostic complexity of bulbar syndromes and reinforces the necessity for a full evaluation when atypical features are present, particularly sensory deficits and trigeminal involvement.

Furthermore, our case showed brachial plexus involvement, which was not previously reported, suggesting other possible supportive diagnostic criteria for this syndrome.

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