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CHRONIC INFLAMMATORY DEMYELINATING POLYRADICULONEUROPATHY

Two cases with cervical spinal cord compression

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ABSTRACT - Chronic inflammatory demyelinating polyradiculoneuropathy (CIDP) is a peripheral nerve disorder probably due to an immunological disturb. It evolves either in a steadily progressive or in a relapsing and fluctuating course. Weakness is mainly in the lower limbs proximally and distally. The electromyography is demyelinating. The cerebral spinal fluid protein is most of times elevated. Sometimes enlarged nerves are found. There are few cases described with spinal cord compression due to hypertrophic spinal nerve roots. Two patients (females, 66 and 67 years old) with diagnosis of a long standing CIDP are described. In the first one, the evolution was characterized by remission and relapsing course. The second patient had a chronic and progressive course. These patients presented after a long evolution a cervical spinal cord compression syndrome due to hypertrophic cervical roots. Neurologists must be aware of the possibility of development of spinal cord compression by enlarged spinal roots in patients with a long standing CIDP.

KEY WORDS: chronic inflammatory demyelinating polyradiculoneuropathy (CIDP), spinal root hypertrophy, spinal cord compression.

Polirradiculoneuropatia desmielinizante inflamatória crônica: dois casos com síndrome de compressão medular

RESUMO - A polirradiculoneuropatia desmielinizante inflamatória crônica (PDIC) é uma afecção dos nervos periféricos de natureza autoimune, com evolução por surtos de exacerbação e remissão ou de evolver progressivo. O acometimento motor é predominante, com fraqueza proximal e distal nos membros inferiores. A eletroneuromiografia é do tipo desmielinizante com bloqueio de condução nervosa em dois ou mais nervos. Há aumento de proteínas do líquor. Com a evolução da doença pode haver espessamento dos nervos distal e/ou proximalmente. Excepcionalmente ocorre compressão da medula espinhal em qualquer segmento por raízes próximas hipertrofiadas. Foram estudadas duas mulheres de 66 e 67 anos respectivamente com quadro de PDIC de longa evolução. A primeira tinha evolução por surtos e na segunda o evolver era progressivo. Nos dois casos o espessamento proximal dos nervos provocou síndrome de compressão medular alta. Esta complicação deve ser pensada em casos de PDIC de longa duração.

PALAVRAS-CHAVE: polineuropatia inflamatória desmielinizante crônica (PIDC), hipertrofia de raízes nervosas, compressão medular.

Chronic inflammatory demyelinating polyradiculoneuropathy (CIDP) usually presents as a more or less symmetric sensorimotor polyradiculoneuropathy with chronic relapsing or remitting or progressive course. There is no clear estimate of its frequency but it may represent as many as 10%-30% of previously undiagnosed cases of polyneuropathy[1]. Usually there is predominance of weakness with diffuse hyporeflexia or areflexia. The cerebrospinal fluid (CSF) demonstrates albuminouscytologic dissociation and nerve conduction studies reveals multifocal conduction slowing, conduction block and temporal dispersion. The nerve biopsy shows primary segmental demyelination and axonal degeneration with or without inflammatory infiltration and onion bulbs[2,3]. The therapeutic may be considered a confirmatory diagnostic criterion and consists of immune modulating agents includ-

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ing corticosteroids, plasma exchange and intravenous immune globulin[4]. Occasionally the repetitive demyelination and remyelination with onion bulb formation results in gross enlargement of spinal nerves end roots. CIDP is one of the main causes of the hypertrophic neuropathy[5]. Thickened peripheral nerves were seen in 11% in one large series[3]. Although exceedingly rare, there have been recorded cases of CIDP presenting with spinal cord compression due hypertrophic spinal roots[5-13].

We report two patients with CIDP of long evolution with cervical spinal compression due to hypertrophic roots.

CASES

Case 1 – A 66-year-old black woman had recurrent paresthesias and weakness in hands and feet was first seen in 1986. At that time she had distal tetraparesis with abnormal gait, reduced tendon reflexes, proprioceptive ataxia and superficial hypoesthesia in her legs. The peripheral nerves were not thickened. Tonus, coordination and cranial nerves were normal. An electrodiagnostic evaluation showed a sensorimotor demyelinating polyneuropathy features: absence of sensitive responses, prolonged distal motor latencies and conduction block in bilateral median and ulnar nerves, severe slowing of motor conduction velocity and abolished F waves. Needle electromyography (EMG) showed active denervation in distal limbs. CSF examination revealed albuminous-cytologic dissociation and a sural biopsy showed demyelination and remyelination features, axonal regeneration and presence of some onion bulbs. There was no duplication in the PMP22 gene. The patient was treated successfully with prednisone; however, there were subsequent relapsing courses. Over a period of 11 years she had been maintained in alternating treatment with steroids and plasma exchange. In 2002 her symptoms worsened. She became tetraparetic and couldnot walk. The tonus was increased in lower limbs and a sensitive cervical level to painful-touch sensation could be found. The tendon reflexes were abolished and there were withdraw reflexes with bilateral Babinski sign. A cervical magnetic resonance image (MRI) revealed hypertrophy of cervical spinal roots, with spinal compression, enhanced with gadolinium (Fig 1). Steroids, imunoglobulin and plasma exchange were given with no improvement.

Case 2 – A 67-year-old woman presented in 1981 a cervical pain irradiating to the left arm. She was submitted to a myelography and a cervical spine surgery showed hypertrophic cervical roots. In 1983 she had a low back pain radiating to posterior surface of right thigh and weakness of this limb. A laminectomy was performed with some relief of the pain. There is no reference of the neurological examination in this period. Five years after she complained of pain and asymmetric weakness of all limbs, and stopped walking. No similar cases in the family are reported. There were distal amyotrophy in all 4 limbs with slight deformity of the left hand, distal and proximal tetraparesis more severe in the lower limbs. Deep tendon reflexes were absent in lower limbs. There were superficial hypoesthesia below the knees and loss of vibratory sense in lower limbs and in the inner aspects of the left forearm and hand. The ulnar and posterior auricular nerves were uniformly palpable and thick. The CSF showed 1 cell/mm^3 and 48 mg/dl of protein. The tonus was increased in the lower limbs. There was bilateral Babinski sign. The left biceps reflex was present and the other tendon reflexes were absent. A nerve conduction study revealed a generalized slowing of motor conduction and a conduction block in ulnar and median nerves, the sensory nerve action potentials were abolished in the sural, ulnar and median nerves and the F waves were prolonged in most nerves. The EMG was not performed. Sural nerve biopsy demonstrated a great loss of fibers, some inflam-

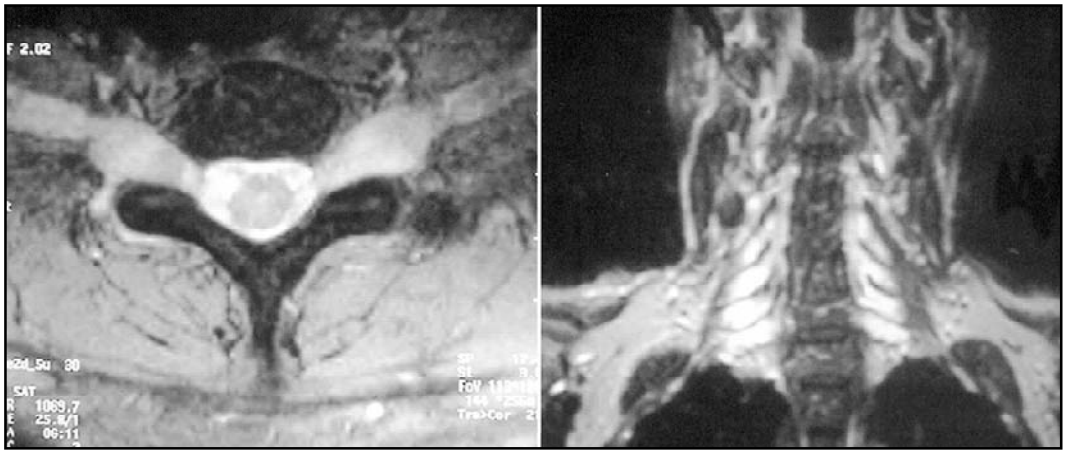

Fig 1. Case 1. Axial and coronal T2 weighted cervical spinal MRI showing roots hypertrophy.

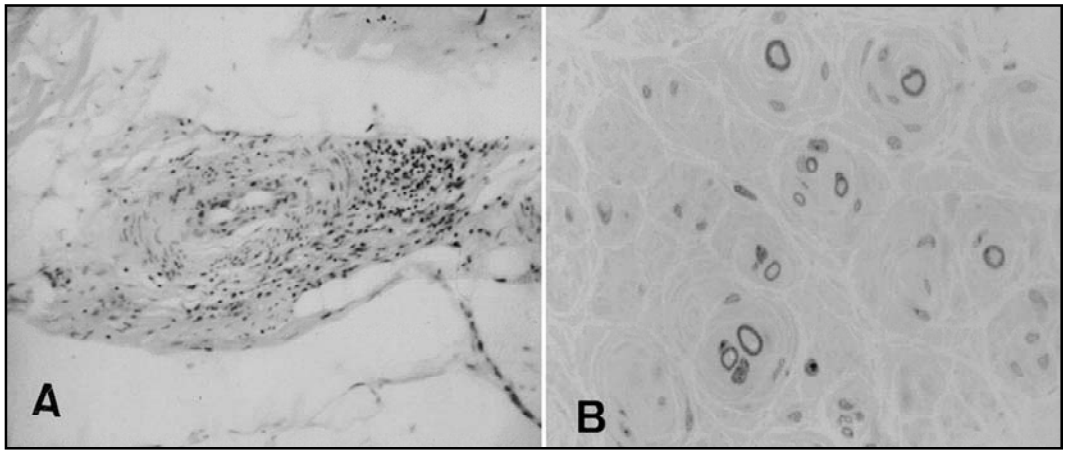

Fig 2. Case 2. Sural nerve biopsy. A) Presence of perivascular inflammatory infiltration (hematoxylin-eosin stain, X400). B) Semi-thin sections showing onion bulbs (toluidine blue stain, X400).

matory infiltrates, fibrosis, clusters of regenerated axons as well as thinly myelinated axons and many onion bulbs (Fig 2). Ultrathin sections showed similar features. The patient was put on 60 mg prednisone per day, and 30 days after she could walk without support with great improvement of the strength and sensation. She had been maintained with prednisone and intravenous metilprednisolone for 10 years. In 1999 there was worsening of her neurological examination, showing paraplegia with increased muscle tonus, bilateral Babinski sign and diminished superficial and hypoesthesia below C6 level. She died in 1999 of septicemia. A necropsy examination of the spinal cord revealed fusiform swellings of all ventral and dorsal roots. Histological examination showed that the root enlargements were due to hypertrophic demyelinating neuropathies with onion-bulb formations and cellular infiltration.

DISCUSSION

Our two cases fulfilled clinical, neurophysiological and pathological criteria for CIDP diagnosis[1-3]. There was no family history of Charcot-Marie-Tooth (CMT) disease, and the genetic markers for CMT1A in the first patient was absent. Sural nerve biopsies performed in both patients showed images of demyelination and remyelination with onion-bulb formations. In the second patient there was also inflammatory infiltration. There was a historyof almost 17 years of relapsing and remitting courses in both patients. Treatment over several years with corticosteroids resulted in an unequivocal improvement. The patients presented many years after the onset, cervical spinal cord compression with tetraparalysis, hypertonicity, bilateral Babinski sign and a sensitive level. Our patient number 2 presented with radicular signs since the beginning of the disease, first in cervical level and two years after in lumbar level. The most striking feature was the diffuse, marked enlargement of peripheral roots, demonstrated in one case by MRI and the other by necropsy studies. They had an unusual clinical picture of cervical spinal cord compression determined by CIDP.

Spine MRI is a valuable addition to the diagnostic armamentarium in CIDP. Enlarged spinal roots may be identified in patients being investigated for demyelinating neuropathy as in our first case. Nerve root enhancement with gadolinium, seen in our patient, is sometimes found in inflammatory demyelinating neuropathies[5,9,11].

When CIDP evolves slowly and its progression is more insidious it may be difficult to distinguish it from a hypertrophic CMT. There are few cases of hereditary hypertrophic neuropathy producing spinal cord compression syndromes[14,15].The information described by Symmons and Blackwwod in the first case reported[15] does not allow confident determination of whether the neuropathy was acquired or genetically determined. In our first case the molecular genetic studies disclosed no duplication at 17p11.2. Although we had not done DNA studies in our second patient, the relapsing and fluctuating course and the inflammatory infiltrates in the nerve biopsy confirm the diagnosis of CIDP. The nerve enhancement with gadolinium seen in patient one, although nonspecific, probably distinguish clinically active CIDP from genetically determined hypertrophic neuropathy, where the roots do not enhance[5,9,11,16]. Both our patients had improved in the course of the disease with corticosteroids.

The differential diagnosis of hypertrophy roots should be done also with neurofibromatosis that could be associated with spinal compression syndromes[13]. The long course of disease (16 years in case 1 and 17 years in case 2) was an evident determinant for the evolution of hypertrophy, causing spinal compression. Recently it has been reported[17] the beneficial effect of interferon β1a in patients with CIDP that are refractory to the conventional treatment, although controlled and randomized studies are needed to confirm the effectiveness of this treatment. Although decompressive laminectomy was not done in our patients, we agree that it is an acceptable option of treatment in cases with spinal cord compression[4,5].

Although CIDP is a common disorder of the peripheral nerve system, the radicular and the spinal compression due to this syndrome is seldom related[5-13]. In case of patients with CIDP with enlarged nerves and minimal symptoms and signs of spinal cord involvement it is necessary to perform MRI studies of the spine and try to modify the treatment to prevent the functional deterioration. Our cases and other observations already mentioned suggest that new forms of treatment are needed in cases of spinal cord compression due do enlarged spinal roots in CIDP.

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