

SHORT REPORT

Hereditary neuralgic amyotrophy associated with a relapsing multifocal sensory neuropathy

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Abstract

A family with neuralgic amyotrophy (idiopathic brachial plexus neuropathy) associated with a multifocal sensory neuropathy is described. Four members over two generations were affected by neuralgic amyotrophy, inherited as an apparent autosomal dominant trait; two also had a multifocal relapsing sensory neuropathy with the clinical features of Wartenberg's migrant neuropathy.

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Familial neuralgic amyotrophy (idiopathic brachial plexus neuropathy) was originally described by Dreschfeld in 1987¹ and subsequent reports defined its features more precisely.²⁻¹⁵ It is inherited as an autosomal dominant trait, affecting males and females equally. As in the sporadic variety, it predominantly affects the brachial plexus but it may also involve the lower cranial nerves, the lumbosacral plexus and isolated limb nerves. Recurrent attacks are a feature. There may be accompanying mild dysmorphic features, including hypotelorism, epicanthic folds, cleft palate and minor degrees of syndactyly.

Wartenberg's 'migrant sensory neuritis'^{16,17} is a relapsing and remitting multifocal sensory neuropathy characterised by pain of sudden onset in the distribution of a cutaneous sensory nerve. The onset of symptoms is most commonly in the fourth or fifth decades. The duration of the pain is brief and it is followed by sensory loss which then usually recovers over a period of weeks, although complete resolution does not always occur. The attacks may be triggered by movement¹⁷ and stretching of nerves has been thought to be important in pathogenesis. Motor nerves are not affected and the tendon reflexes remain normal.

We describe a family in which neuralgic amyotrophy occurred in four individuals in two generations. This was associated with a relapsing multifocal sensory neuropathy in two of those affected. The index case was one of a sibship of four in which one brother was unaffected.

Case Histories

Case 1

This woman was first seen at the National

Hospital, London in 1985, aged 25 years, and has been under outpatient review since then. When aged 19 years, she developed pain around her right shoulder which lasted about 2 days. She then found difficulty in elevating the right arm and was noted to have winging of the right scapula. This recovered over the following 5 months. There were no clear precipitants to this event.

At the age of 20 years she began to suffer episodes of pain, usually in the limbs, which lasted for a few days and were followed by areas of sensory loss, sometimes accompanied by tingling parasthesiae. Again these episodes did not have any obvious precipitants but, at their onset, the tingling and pain could be exacerbated by movement. Over a period of 18 months there were five such episodes, each with a painful onset and accompanied by tingling. Although the pain and tingling resolved, the patient was usually left with some residual alteration of cutaneous sensation in the affected area. These areas were mainly on the limbs but two episodes had involved the buttocks and trunk respectively. Examination in 1985 revealed no dysmorphic features or abnormalities of the cranial nerves or motor system. There were five areas of abnormal cutaneous sensation with reduced pin prick and touch. Three of these were on the limbs, one on the trunk and one over the left buttock. They were approximately circular and were several centimetres in diameter. There were no thickened nerves. Routine haematological and biochemical screening tests of the blood were normal and nerve conduction studies were unremarkable. A chest radiograph was normal and a Kveim test was negative.

Over the ensuing two years, some further patches of numbness appeared on the trunk. She then remained free of further manifestations until 1990 when she developed burning pain over the posterior aspect of the left upper arm and the medial border of the left forearm. The pain subsided over the following three weeks but during this time she became aware of weakness in her left hand. Examination five weeks after the onset of these symptoms showed focal wasting affecting the extensor muscles of the left forearm and weakness of the extensor pollicis longus. There was milder weakness of the finger and wrist extensors and some cutaneous sensory impairment over the posterior aspect of the upper arm. Electro-

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myography demonstrated denervation in extensor pollicis longus. The left radial sensory nerve action potential was of normal amplitude and conduction velocity. The weakness slowly improved and ultimately recovered fully; the sensory impairment also cleared.

The patient became pregnant in January 1991. In September 1991, two weeks before delivery, she developed severe pain over the outer aspect of the right upper thigh which she maintained was worse than her subsequent labour pains. This was followed by cutaneous sensory loss in the same area and the pain subsided. Delivery was by caesarian section because of delay in the second stage. The day following delivery she developed severe pain in the region of the left shoulder followed by a patch of numbness on the tip of the shoulder and, two days later, difficulty in elevating her arm at the shoulder. Coincident with this, she also noticed weakness of the pincer grip between her thumb and index finger and numbness across the lower abdomen. A numb patch appeared over the dorsum of the right hand, by which time the pain in the left shoulder had subsided. Examination in November 1991 showed prominent winging of the left scapula from serratus anterior weakness, weakness of the left flexor pollicis longus and slightly of flexor indicis, and depressed tendon reflexes in both arms. There was cutaneous sensory loss over the upper aspect of the left shoulder, on the dorsum of the right hand, and extensively over the lower abdomen bilaterally. Areas of sensory impairment were also evident over the upper lateral aspect of the right thigh and the medial aspect of the right knee. The right radial sensory nerve action potential was normal.

When last seen in February 1992, the weakness of the left flexor pollicis longus and flexor indicis had cleared but scapular winging was still present. Sensory loss was barely detectable over the left shoulder and in the right hand, but other areas were unchanged.

Case 2

A brother of the patient described above was examined at the National Hospital when aged 26 years. When aged 17 years he had sustained a fractured femur in a motor cycle accident. Six weeks after the accident he developed severe pain across both shoulders associated with some probable weakness of the shoulders. These symptoms recovered over several weeks. From that time he has experienced occasional patches of numbness on the limbs and trunk. These had usually been associated with pain at the onset and some tingling in the affected area. The pain and tingling subsided quickly with each episode but the numbness has often only partially resolved.

When aged 25 years he developed a numb spot on the left side of his neck and, approximately three months later, he noticed wasting of the left trapezius and weakness of the shoulder. This recovered partially. On examination when aged 26 years there was mild wasting of the left trapezius and slight weakness of this muscle and of the left infraspinatus.

There were circular areas, a few centimetres across, of impaired sensation to touch and pin prick on the abdomen and on the inner aspect of the right knee. There were no other abnormal findings.

Case 3

A brother of the patient described in case 1 (not examined) developed a painful winged scapula when aged 25 years. This recovered satisfactorily.

Case 4

The father (not examined) of these three siblings experienced a painful winged scapula which developed 2 weeks after an injection of antitetanus serum. This soon became painless but the muscle weakness recovered only partially.

Discussion

Although only two family members were examined, the historical description of two other affected family members is strongly suggestive of neuralgic amyotrophy. This term is preferable to 'idiopathic brachial plexus neuropathy' as the weakness may affect nerves outside the plexus. In the present index case, in one episode there was focal weakness of the forearm extensor muscles and, in another, the weakness indicated involvement of the anterior interosseous branch of the median nerve. The occurrence of lesions related to pregnancy in this patient is of interest. Although this association is recognized in sporadic patients it is more common in familial cases.^{2-4 7 8 11} Episodes may develop during the third trimester but, as in our index case, they may show a fulminant onset early in the puerperium.

Two members of the family also had relapsing multifocal sensory neuropathy with clinical features that resembled those of Wartenberg's migrant sensory neuropathy, such as the occurrence of pain in the affected area before the appearance of sensory loss and the exacerbation of symptoms by movement or the stretching of a limb. The question arises as to whether these are two distinct syndromes with a chance association or whether this is a single disorder. Neuralgic amyotrophy has an estimated annual incidence of 1.64 per 100 000 population¹⁸ and is therefore an uncommon condition. Patients with a family history of the disorder are rare. Matthews and Esiri¹⁷ describe Wartenberg's sensory neuropathy as being 'not uncommon'. Nevertheless, most neurologists have seen very few cases. A chance association therefore appears to be unlikely. Multifocal sensory involvement has not been a feature in the previously recorded families with hereditary neuralgic amyotrophy.

There is little available information on the pathological changes in the two disorders. In our index case (case 1) we have not performed a nerve biopsy as at no time has there been clinical or neurophysiological involvement of a sensory nerve accessible for biopsy. In patients with familial neuralgic amyotrophy, Bradley *et al*¹³ performed sural nerve biopsies and found

tomaculous myelin changes, similar to those seen in hereditary liability to pressure palsies (HLPP).¹⁹ These findings were not confirmed in other studies^{14,20} and are not specific for HLPP. Some patients in families with HLPP may develop brachial plexus lesions^{13,19-21} but these are usually single and are not painful. Other nerves are more frequently affected. Neither our index patient nor her brother (case 2) related any of their episodes to pressure injury.

Previous descriptions of Wartenberg's migrant sensory neuropathy have not documented a tendency to pressure palsies or to nerve entrapment. Biopsy of an affected sural nerve from the series of six cases reported by Matthews and Esiri,¹⁷ in none of which was there familial involvement, showed loss of large myelinated nerve fibres, fibrosis and evidence of axonal regeneration. A single occluded epineurial vessel was seen with no indication of vasculitis. Asbury *et al*²² reported two patients with painful relapsing and remitting lower limb multifocal sensory neuropathy. Nerve biopsy showed granulomatous inflammatory change affecting the perineurium. This is probably a separate disorder which was termed sensory perineuritis. Nevertheless, it can be questioned whether Wartenberg's neuropathy is a single entity. It is perhaps more likely to represent a syndrome produced by more than one underlying condition. This family, which appears to be unique, suggests that a similar multifocal sensory neuropathy may be a feature of hereditary neuralgic amyotrophy.

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