■ CASE REPORT

Cyclical sciatica

ENDOMETRIOSIS OF THE SCIATIC NERVE

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We describe a case of sciatic endometriosis in a 25-year-old woman diagnosed by MRI and histology with no evidence of intrapelvic disease.

The presentation, diagnosis and management of this rare condition are described. Early diagnosis and treatment are important to prevent irreversible damage to the sciatic nerve.

Sciatic endometriosis is uncommon but should be considered in a woman who presents with sciatica associated with menstruation. There are more than 30 reports of this condition in the literature, involving nearly 70 cases, but few present histological evidence of the pathology.

Salazar-Grueso and Roos¹ reported a mean interval of 3.7 years between the onset of symptoms and diagnosis. Awareness of this condition in the differential diagnosis of sciatica is important in order to avoid delay in diagnosis and to prevent irreversible damage to the sciatic nerve.

We describe the case of a 25-year-old woman who presented with cyclical sciatica. The diagnosis was confirmed histologically. There was no intra-pelvic disease. She was treated by local excision.

Case report

A 25-year-old woman presented to her general practitioner with a two-month history of constant pain in her thigh. There was no history of trauma and the onset was insidious. A diagnosis of a soft-tissue injury was made. However, despite anti-inflammatory medication and physiotherapy she developed increasing pain, typically sciatic in nature, from the left buttock, radiating down the posterolateral aspect of the leg and heel. This would escalate to a severe left-sided sciatic pain during menstruation. Two years later she had developed a limp and was referred to an orthopaedic surgeon. At the time of clinical assessment she had marked pain (Visual Analogue Scale (VAS)² 7 and Peripheral Nerve Injury (PNI) scale³ 2) and required either two crutches or a wheelchair. On examination, she had an antalgic gait and was unable to bear

weight fully on her left leg because of the pain in her buttock and leg. The pain was exacerbated by hip flexion and knee extension. There was no apparent muscle wasting or sympathetic changes in the leg and foot. Palpation of the left gluteal region, especially over the sciatic notch, was painful. Motor power was preserved throughout the leg, except for some weakness in the biceps femoris. Straight-leg raising was to 30° only. Reflexes were present, but the ankle jerk only with reinforcement. Sensation to pin-prick, temperature and light touch was reduced in the heel and sole of the foot.

The diagnosis of sciatic endometriosis was considered. The MR scans of the lumbar spine and pelvis were normal. However, MRI on the left thigh demonstrated a mixed signal measuring 10 mm × 8 mm × 6 mm in the sciatic nerve between the sciatic notch and greater trochanter, causing localised oedema (Figs 1 to 3). The scans showed early and late subacute areas of haemorrhage within the mass. The provisional radiological diagnosis was of a fibrolipomatous hamartoma, or possibly a neurofibroma.

The patient refused primary hormonal treatment as she was of reproductive age and exploration was advised. The sciatic nerve in the upper thigh was found to be surrounded by inflammatory tissue. The tibial portion of the nerve contained a cystic lesion filled with brown material. Frozen section showed no evidence of malignancy.

The cyst was dissected out from the fascicles using a microsurgical technique, leaving the sciatic nerve intact. Histopathological examination confirmed endometriosis of the sciatic nerve with no evidence of malignancy (Figs 4 and 5).

Fig. 1

Axial post-gadolinium fat-saturated T₁-weighted MR scan showing a lesion in the left sciatic nerve demonstrating a high signal.

Fig. 3

Coronal T₁-weighted MR scan of the sciatic nerve lesion showing a high signal.

Fig. 2

Axial T₂-weighted image showing a lesion in the sciatic nerve which has an intermediate to high signal.

Post-operatively and at 12 months follow-up her pain was considerably relieved (VAS² 2, PNI³ 1). She was able to walk without crutches and could straighten the leg. There was an improvement in sensation over the heel and sole of the foot to pin-prick, temperature and light touch. She was referred to a gynaecologist, who performed a laparoscopy which now showed no evidence of intra-pelvic endometriosis.

Discussion

Endometriosis is a chronic recurrent disease characterised by the proliferation of endometrial tissue outside the uterine cavity. It is a common gynaecological disease affecting between 1% and 5% of women of reproductive age. It is an oestrogen-dependent disorder, the lesion undergoing regression during episodes of reduced ovarian activity. Many theories have been postulated for its pathogenesis, but the most widely accepted is by Sampson,⁴ who postulated retrograde menstruation as the underlying mechanism. This theory has been supported by experiments carried out by Kruitwagen et al.,⁵ Scott, Te Linde and Wharton⁶ and D'Hooghe et al.⁷

In 1962, Head et al.⁸ reported a case of cyclic sciatica. The typical symptoms were sciatica related to menstruation with a pain-free interval that becomes progressively shorter, and the pain may become constant. No patients complained of low back pain, but usually of thigh pain extending down the posterior or lateral aspect of the limb to the foot, sometimes associated with sensory loss, muscle weakness, and reflex alterations. Pain on straight leg-raising (Lasegue's sign⁹) was often present, and tenderness in the sciatic notch often elicited.

The occurrence of endometrial tissue at the root of a nerve or within the nerve itself is one of the rarest variations of this condition. The precise pathogenesis of endometrial

Fig. 4

Immunohistochemistry using a pancytokeratin antibody (MNF116) which highlights the endometrial tissue. On top the nerve fibres are seen to be closely associated with the glandular tissue (20× magnification) (cytokeratin stain).

Fig. 5

Histology of endometriosis of the sciatic nerve showing a nerve fascicle lined by endometrial-type epithelium (haematoxylin and eosin stain, 10× magnification).

sciatica is still unknown. Numerous theories have been put forward to explain the localisation of endometrial tissue to the sciatic nerve. The existence of a peritoneal diverticulum permitting endometrial tissue to migrate into the sciatic nerve from the site of genital endometriosis or after retrograde menstruation from the fallopian tubes has been suggested.¹⁰ This is thought to give rise to the 'pocket sign', an evagination of the pelvic peritoneum to form a pocket in the surrounding retroperitoneal tissues extending towards the sciatic notch. Haematogenous spread, coelomic metaplasia and embryonic cell rests have also been presented as alternative hypotheses.¹¹

Ectopic uterine mucosa, once implanted on the peripheral nerve, aggressively invades the epineurium and perineurium. Physiological withdrawal of oestrogens and progesterone causes intraneural endometriomata to 'menstruate' into adjacent tissue spaces and results in intrafascicular haemorrhage and dense fibrosis. During each menstrual cycle, as the hormonal milieu of the body alters, the endometrial tissue in the sciatic nerve undergoes haemorrhage into the surrounding tissues causing a considerable inflammatory reaction.

A full clinical and neuroradiological evaluation is important when considering other possible diagnoses. Histological diagnosis may be obtained by aspiration biopsy of the lesion. Recently, a case of sciatic endometriosis was diagnosed by a percutaneous CT-guided needle biopsy followed by CD10 immunohistochemical staining.¹⁰ Although a histological diagnosis is useful to rule out other disease, and especially malignancy associated with sciatic endometriosis, this condition can be diagnosed by a combination of clinical history, imaging, and by demonstrating regression of the lesion on imaging after hormonal therapy. Diagnosis is possible on CT

and MRI, but the appearance can be variable as solid or complex cystic masses, or as cystic lesions with thick or thin walls. In this case, the absence of endometriosis elsewhere in the pelvis did not exclude the diagnosis of sciatic endometriosis. With MR imaging, endometriomas often exhibit a relatively high signal on both T₁- and T₂-weighted sequences. The intensity of the signal is a function of the quantity and age of the haemorrhage on the one hand and the proportion of endometrial cells and stroma on the other. Magnetic resonance imaging can also be useful in the differential diagnosis from a benign neurogenic tumour. Electromyography can demonstrate signs of denervation as well as slowing of conduction speed, and could be useful to help differentiate root and peripheral nerve involvement and to follow nerve recovery.

Previously, sciatic endometriosis was treated primarily by surgery, most commonly hysterectomy and bilateral salpingo-oophorectomy. Prompt commencement of medical treatment to suppress gonadal activity permits confirmation of the diagnosis and prevents progression of the disease. However, hormonal treatment must be continued for a long time. It reduces the chances of pregnancy, and there is a significant recurrence rate. In this patient, conservative surgery led to a resolution of symptoms.

In advanced cases with a delayed diagnosis, total recovery of motor function is rare, even after complete surgical removal of the lesion. Fibrosis during the healing process is likely to induce permanent nerve damage. It is generally agreed that the prognosis depends on the interval between the onset of symptoms and diagnosis. Delay in diagnosis may lead to considerable disability. This diagnosis should be considered in a patient who presents with sciatica which is related to menstruation. Early referral for specialist investigation and management is recommended.

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