LETTERS TO THE EDITOR

Figure A segment of ECG monitoring illustrating sinus arrest.

Ophthalmoplegic migraine and recurrent sinus arrest

Cardioinhibitory vagovagal reflex, induced by pain, is well known. We are unaware, however, from the literature, of recurrent sinus arrest episodes in the setting of ophthalmoplegic migraine, a rare entity in itself (0.16% in a large series).¹

A 34 year old female was admitted to the intensive cardiac care unit on 19 July 1987 following three events of dizzy spells, malaise and near fainting. The day before she sustained a recurrent throbbing pain in her left temple. Recurrent episodes of sinus arrest were seen, lasting 2-4 s, without syncope (fig). Her physical examination was otherwise non-contributory and other laboratory data were normal. Her history revealed only occasional headache, either unilateral or bilateral, sometimes accompanied by nausea. She did not smoke or take any medication. We found no family history of headache, seizure, sudden death or chronic diseases.

During six consecutive days in the intensive cardiac care unit, she sustained recurrent pain in her left temple and almost every time a sinus arrest was recorded on the monitor, 10-20 times per day.

On the sixth day, the headache began to recede and gradually left sixth nerve palsy and diplopia became apparent as the only neurological deficit. EEG and brain CT, as well as LP, performed when a sixth nerve palsy appeared, were normal. Her double vision completely cleared three weeks later.

A trial of atropine treatment (iv) was given,

resulting in a switch from extreme sinus bradycardia to regular nodal rhythm. The patient refused invasive electrophysiological study of the heart. Autonomic functions were normal: her blood pressure ranged between 110/70 and 120/70 mmHg. Orthostatic hypotension was absent. Her diaphoresis was not disturbed and bowel movement was regular. Limited tests were done. Eyeball pressure did not change the heart rhythm in the interictal periods; carotid massage did not reveal hypersensitivity of the carotid sinus. Valsalva manoeuvre showed a normal "overshoot" of blood pressure in the fourth phase.

The diagnosis was based on the clinical course, outcome, physical examination, normal CSF and brain CT. On CT with enhancement, no aneurysm was visualised. The patient refused carotid angiography.

Tolosa-Hunt painful ophthalmoplegia is another possibility. Hunt's criteria² were almost totally fulfilled. It is, however, difficult to differentiate between the two conditions.³ The short duration of pain and the benign self-limiting course favoured the diagnosis of ophthalmoplegic migraine.⁴ The speculative explanation of the mechanism in the two entities indicates that they may share common features.^{5,6}

Symptoms of autonomic dysfunction are well known in migraine, and an ophthalmoplegic variant is not an exception in this case.⁷ This autonomic dysfunction was an isolated episode. Abnormalities in the sympathetic nervous system in those with migraine headache are well known,⁸ but cause arrhythmias, and not sinus arrest. The right

vagus is supposed to innervate the sinoatrial node; its stimulation causes sinus arrest.⁹ It is not clear how it was stimulated by a presumed left extra-axial process. Perhaps the pain acts as the "non-localised" trigger of multiple sinus arrest spells.

A follow up over two years found the patient healthy, except for her "habitual" headache, and no focal signs have been detected.

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Reversal of foot drop in sciatic nerve endometriosis

Pelvic endometriosis is a common gynaecological disorder. While usually involving the ovaries, uterosacral ligaments and pelvic peritoneum, it may rarely invade the sciatic nerve and its plexus.^{1,2} The latter complication is typified by cyclical sciatica or foot drop. Previous endeavours to treat leg weakness in pelvic endometriosis have met with limited success.³ In our study of sciatic nerve endometriosis we report the successful reversal of foot drop with danazol.

A 46 year old single nulliparous woman presented to the neurology service with a twenty month history of progressive, painless right foot drop. For thirteen months she had experienced numbness in the right foot and for several weeks tingling in the right sole. She gave a history of a severe head injury at age 12 years but had recovered well with only mild balance problems thereafter.

The patient had a long-standing history of regular heavy menses associated with troublesome dysmenorrhoea.

On examination there was severe weakness of dorsiflexion and plantar flexion of the right

foot and toes and moderate weakness of the hamstrings. The right ankle reflex was absent and the right foot cold and blue. Tone was reduced at the right ankle but there was no muscle wasting and no fasciculations. Light touch, pain and temperature were reduced over the dorsum and plantar surface of the right foot extending laterally to the mid calf level. Vibration and position sense were intact. Electromyographic examination of the right tibialis anterior, peroneus longus, medial hamstring and gluteus medius muscles showed evidence of active denervation with fibrillation potentials, increased numbers of polyphasic motor unit potentials and impaired motor unit recruitment. No evidence of denervation was found in the right vastus lateralis, gluteus maximus and lumbosacral paraspinal muscles. A myelogram was normal but a pelvic ultrasound scan revealed a large complex intrapelvic mass measuring 11 x 9 x 9 cm which appeared malignant.

At laparotomy, severe endometriosis was revealed with an American Fertility Society Score of 136/150. There was complete obliteration of the pouch of Douglas with a large left ovarian endometrioma and a smaller

fixed right tubo-ovarian endometriotic mass. A left salpingo-oophorectomy was performed but due to fixation on the right, the endometrioma was drained but not excised.

A post operative pelvic CT scan revealed a 5 x 3 cm hypodense mass adjacent to the right sacro-iliac joint (fig 1). The patient was started on danazol 200 mg twice daily.

Three months after surgery she no longer had paraesthesiae and dorsiflexion of the right foot was only slightly impaired. At twelve months, dorsiflexion of the right foot was normal and the right ankle reflex had returned. Light touch, pain and temperature were impaired only distal to the right ankle. Electromyographic studies showed evidence of recovery with an absence of fibrillation potentials in previously denervated muscles in the right leg. Furthermore, these muscles exhibited increased amplitudes and increased "jitter" indicative of active collateral sprouting. Danazol treatment was stopped after eleven months.

A CT pelvic scan at six and 12 months showed no significant change in the size of the endometrial mass but at 15 months it had reduced in size to 2 x 0.5 cm and had a density consistent with fibrosis (fig 2). When

Figure 1 CT scan of the pelvis at the third sacral level. A tumour mass (endometrioma) lies in the region of the right sciatic notch.

Figure 2 CT scan taken at the same level as fig 1. The endometrioma has largely resolved following danazol therapy.

seen 24 months after presentation she was asymptomatic and had a normal neurological examination.

Sciatic nerve endometriosis, though rare, may be presumptively diagnosed by a history of cyclic (catamenial) pain in a sciatic nerve distribution. Less frequently endometrial neural pain may be non-cyclical. Alternatively motor symptoms may predominate with painless foot drop occurring at each menses or as in our case, leg weakness may develop slowly and insidiously over many months.

Endometriosis may be suspected from a history of secondary dysmenorrhoea, dyspareunia or infertility. An unequivocal diagnosis can only be made by direct visualisation of the disease at the time of laparoscopy or laparotomy. Where the pelvis is found to be free of endometriosis, peritoneal "pockets" may be the only clue to the site of retroperitoneal implants of endometriosis on the sciatic nerve.² Ectopic uterine mucosa, once implanted on peripheral nerve, aggressively invades the epineurium and perineurium.⁴ Physiological withdrawal of oestrogens and progesterone causes intraneural endometriomata to "menstruate" into adjacent tissue spaces and results in intrafascicular haemorrhage and dense fibrosis.⁴

Electromyographic studies in pelvic endometriosis have indicated that axonal degeneration is the dominant nerve fibre pathology.⁴ Pelvic CT examination is often distinctive, showing a solid mass at the level of the sciatic notch which may enhance. Because of its frequency in menstruating women, endometriosis is probably the commonest cause of non-traumatic sciatic nerve compression at the level of the sciatic notch.

Medical treatment of endometriosis followed the observation that this disorder generally improved during the amenorrhoea of pregnancy or the menopause. Danazol, now considered the medication of choice, suppresses all endogenous stimuli to the endometrium and allows spontaneous atrophy of the disease.

With peripheral nerve involvement in endometriosis, danazol (400–800 mg daily) should be continued until there is

neurological recovery or a sustained plateau of improvement. There must be long term neurological surveillance following cessation of danazol therapy since trials have shown recurrence rates as high as 39% within 37 months.⁵

While previous reports have suggested that surgical castration is the treatment of choice for peripheral nerve involvement in endometriosis, such treatment has never resulted in a reversal of foot drop.³ Although the excision of endometrial implants from the sciatic nerve has often been effective in reducing sciatica, this procedure may aggravate or produce sciatic nerve weakness.² The complete and sustained recovery of crural weakness with danazol in this patient suggests that this should be the primary treatment for this complication of endometriosis, particularly when the patient is young or desires continuation of her reproductive function.

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Should clinicians be given hard copies of duplex carotid ultrasound images?

Duplex carotid sonography (DCS) is an accepted, non invasive method for assessing stenotic lesions of the extra-cranial carotid circulation.¹ Duplex scanning uses a combination of high resolution imaging and Doppler ultra sound that detects wall abnormalities and flow changes. Diagnostic accuracy for assessing the cervical carotid artery is comparable to intravenous digital subtraction angiography,² but a major problem is that the interpretation of findings are greatly operator dependent; inter-observer variability in the interpretation is therefore an important drawback of this method.³ Duplex scanning provides real-time images but hard copies of these images on paper or film can be provided—at a cost—for interpretation by others. We have tested whether clinicians can interpret these images correctly, and therefore indirectly, whether clinicians should be routinely provided with hard copy images of duplex studies.

Duplex images of 37 cervical carotid arteries of varying degrees of stenosis from normal to complete occlusion from 21 patients with TIAs or minor strokes were selected for the study. Four clinicians participated, three of whom were clinical neurologists and one a vascular surgeon. One neurologist and the vascular surgeon had some experience and the other two neurologists had no experience of duplex imaging. Participants were provided with one duplex image per artery and were asked to: 1) Identify the ICA and draw a sketch of it; 2) Say how easy the image was to interpret using a scale of easy, difficult and uninterpretable. 3) Assess the degree of diameter stenosis of the ICA into one of the following categories: normal, 1–24%, 25–49%, 50–74%, 75–99% stenosis or occluded.

These assessments were carried out "blind" to the ultrasonographers report and the other clinicians' assessments.

The findings of the ultrasonographer (A) were taken as the "gold standard" for each artery. Confidence intervals were calculated using the standard method for the confidence interval of a proportion.⁴

The clinician (B) found 22 images easy to interpret and the other 15 images difficult to interpret. Clinician (C) found 21 images easy to interpret, 14 difficult to interpret and two images uninterpretable. Clinician (D) found 14 images easy to interpret, 18 difficult and five uninterpretable. Clinician (E) found only four images easy to interpret, 23 difficult and 10 uninterpretable.

The number of arteries incorrectly identified by each clinician was: Clinician (B)—1 artery (3%, 95% CI 0–8), (C)—8 arteries (22%, 95% CI 9–35), (D)—9 arteries (24%, 95% CI 10–38) and (E)—11 arteries (30%, 95% CI 15–44).

The number of arteries in which the clinician agreed with the ultrasonographers assessment are given in the table. The Kappa statistic to assess inter-observer agreement was not calculated because of the high proportion of "uninterpretable" images for some clinicians.

Inter-observer variation in interpreting duplex images of cervical carotid arteries has been the focus of attention in several studies³ and the variability between trained ultrasonographers seems to be acceptable. This small study assesses the accuracy of interpretation between untrained clinicians. Clinicians with