As well as this central finding, the results of our study provide further support for a role of muscle afferents in proprioception.⁴ Controls were significantly less accurate in reproducing knee joint position when initial test movements differed from subsequent target seeking movements. This has possible implications for the common physiotherapeutic practice of re-educating active movement through the medium of passive movement.

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Worsening of myasthenia gravis on treatment with imipenem/cilastatin

Myasthenia gravis may be exacerbated by a number of antibiotics which impair neuromuscular transmission, including the aminoglycosides, tetracyclines, and the polypeptide group.¹ Several reports have suggested that ampicillin and erythromycin may have similar effects.^{2,3}

We describe here the worsening of myasthenia gravis on treatment with imipenem/cilastatin. Imipenem is a member of a new class of β lactam antibacterial drugs: the carbapenems. It is combined with cilastatin, a renal dehydropeptidase inhibitor, to inhibit renal degradation and has a wide spectrum of activity against Gram positive, Gram negative, and anaerobic bacteria, and against many multi-resistant strains of bacteria.

CASE REPORT

A 45-year-old man presented with a three week history of progressive diplopia, facial weakness, and respiratory difficulties. Myasthenia gravis with malignant thymoma had been diagnosed 10 years previously; thymectomy was performed at that time and histology showed a mixed lymphocytic/epithelial cell tumour. He had a left upper lobectomy for pleural based metastases three years later. For the next seven years he remained well, requiring only 120 mg of pyridostigmine bromide daily.

At presentation mechanical ventilation was necessary. He was treated with azathioprine, steroids were gradually added to a dose of 60 mg prednisolone daily, and he received a course of plasma exchange.

Two months after admission he was extubated. At this stage he was receiving 150 mg pyridostigmine every three hours, azathioprine 150 mg each day, and prednisolone 60 mg on alternate days. Plasma

exchange was continued with an exchange of two litres on a fortnightly basis. Six weeks after extubation a catheter was inserted into the right subclavian vein for easy venous access. He improved slowly. His forced vital capacity (FVC) increased from 0.3 l on admission to 2.4 l with moderate fatigue of the ocular and bulbar muscles. He subsequently developed superficial cellulitis at the site of the catheter. *Staphylococcus aureus* was grown and he was treated with flucloxacillin 500 mg intravenously three times a day. *Serratia marcescens* was grown on a routine sputum specimen taken two weeks previously and thus imipenem/cilastatin 500 mg intravenously four times a day was added.

His myasthenia deteriorated dramatically over the next 48 hours. His FVC decreased to 1.8 l with diplopia, marked bilateral facial weakness, and severe bulbar weakness. He also noted increased weakness in his arms and proximal leg muscles and had difficulty in walking. Serum calcium, urea, and electrolytes were normal. He responded positively to edrophonium 10 mg intravenously, with an improvement of the ocular bulbar and limb weakness. His FVC increased to 2.3 l. The imipenem/cilastatin was discontinued and the other drugs were left unchanged. Plasma exchange was not repeated at this stage due to the presence of infection; despite this, he improved over the next 24 hours and after 48 hours was back to his baseline state. The cellulitis resolved after six days and the flucloxacillin was discontinued after two weeks.

Various antibiotics may interfere with neuromuscular transmission and the mechanisms of action may include: a pre-synaptic effect leading to impaired release of acetylcholine, a post-synaptic curare-like blockade of the acetylcholine receptor, or a combination of the two mechanisms. The aminoglycosides act pre-synaptically and post-synaptically, while the tetracyclines have a curare-like action.¹ The mechanisms of action of ampicillin, erythromycin, ciprofloxacin, and the polypeptides are unclear.^{2,4}

A discussion with staff at Merck, Sharp and Dohme showed that one case had been reported to their adverse event database of myasthenia gravis developing in a patient receiving imipenem/cilastatin. To our knowledge there has been no published case. Our patient developed a worsening of his myasthenia while receiving this drug. His concurrent cellulitis may have been an additive factor, but this persisted long after the patient returned his to baseline state.

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Acceptability of electroconvulsive therapy to patients with Parkinson's disease

Some patients with Parkinson's disease have been shown to respond to electroconvulsive therapy (ECT).^{1–3} It is not currently offered as a treatment for Parkinson's disease in the UK as clinicians do not consider it acceptable because of the stigma surrounding what may be seen as a psychiatric treatment and a fear of ECT by the patients based on a lack of information. This is surprising as non-drug treatments such as fetal tissue transplantation are more invasive and carry a higher risk than ECT. A consultant neurologist, while canvassing the opinions of patients attending a movement disorder clinic to assess the feasibility of a trial, found that patients were not keen to consider ECT as a treatment.

We decided to investigate this further with a larger group of patients in a standard manner using a questionnaire. Patients were asked a series of questions, including whether they would give consent to ECT if it were of definite benefit and, if so, would they agree to ECT as they were at that time or only if their disease became worse. Their opinion on consent to stereotactic transplantation was also sought.

All respondents were current patients selected from the Parkinson's disease register based at the department of neurology at the Institute of Psychiatry. Sixty-five questionnaires were distributed, of which 50 were completed. Twenty-six of these were administered to patients waiting in the outpatient department and 24 were sent out and returned by patients through the post. The mean age of the patients completing the questionnaire was 66.3 years and the mean duration of illness was 7.9 years. Twenty-eight of the respondents were men and 22 women. Fifty per cent of respondents had no other coexisting medical disorder. Twenty-eight per cent of respondents said they would consider ECT as a treatment at their present stage of illness if it was definitely known that ECT was of benefit in Parkinson's disease. A further 32% said they would only consider ECT if their illness became worse, and 36% said they would never consider it.

When asked about stereotactic transplantation, 16% of respondents said they would consider it at their present stage of illness and 28% only if their illness became worse. Fifty-two per cent said they would not consider it under any circumstances.

We conclude that patients with Parkinson's disease are more likely to accept ECT as a potential treatment than stereotactic transplantation. Had the patients been counselled or given further information about ECT, the proportion of respondents in this study agreeing to have it may have been greater. We suggest, in the light of these findings, that although ECT is not yet of proved value, it could potentially be a safe and effective option in Parkinson's disease, and that it is acceptable to a sizeable minority of patients. Those patients for whom drug treatment is proving unsatisfactory or in whom depressive features are prominent may benefit the most from ECT, but there is still a need for a definitive trial and our findings will have a bearing on the design of such a trial.

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Case report: dysphagia and sleep apnoea associated with cervical osteophytes due to diffuse idiopathic skeletal hyperostosis (DISH)

Diffuse idiopathic skeletal hyperostosis (DISH) may be an under recognised contributory factor to both dysphagia and obstructive sleep apnoea.

A seventy-two year old man presented with a 12 month history of intermittent painless dysphagia. He had been aware of the need to be careful when eating and coughing after swallowing was a daily occurrence. Liquids were more troublesome than solids. He had not lost any weight.

In 1989 he had been diagnosed as having obstructive sleep apnoea syndrome. Overnight impedance pneumography revealed more than 40 episodes of apnoea per hour and simultaneous oximetry showed a corresponding fall in oxygen saturation to 80%. Treatment with nocturnal continuous positive airway pressure (CPAP) resulted in improved sleep quality and daytime wakefulness. There was a history of ischaemic heart disease and atrial fibrillation.

On examination he was 170 cm tall, weighed 87 kg, and his neck circumference was 46 cm. He was in controlled atrial fibrillation. There were no neurological signs but the tongue was large and the oropharynx appeared small. Cervical spine movements were limited in all directions.

In a timed test of swallowing¹ he coughed violently after swallowing the first bolus. After a pause he was able to drink 120 ml in 50 seconds (2.4 ml.s⁻¹; normal >10 ml.s⁻¹). Over a two week period his swallowing speed fluctuated between 6 ml.s⁻¹ and 20 ml.s⁻¹; a double blind edrophonium test had no effect on swallowing speed.

Videofluoroscopy examination showed partial hold up of the bolus of contrast in the mid-cervical region. Lateral cervical spine radiographs showed a bridging mass of exuberant new bone formation anteriorly extending from C2 to C7, with a dividing pseudofracture at the C3/C4 level (figure). A bony canal stenosis was also present from the C2 level downwards. Radiographs of the thoracolumbar spine showed areas of new bone formation bridging the vertebral bodies anteriorly. Despite the extent of the new bone formation the intervertebral disc spaces were relatively

Lateral cervical spine radiograph showing bridging mass of exuberant new bone formation impinging on the posterior pharyngeal wall.

well preserved. Radiographs of the pelvis showed irregular projections of bone from the iliac crests and the lateral margins of the ileum. The radiographic features were typical of DISH. An MRI scan of the brain stem and a CT scan of the brain were both normal. A 75 g glucose tolerance test with capillary blood suggested diabetes mellitus with a fasting value of 7.1 mmol/l and a 120 minute value of 11.2 mmol/l.

The patient received advice from the speech therapist and was able to reduce the frequency of coughing by taking double swallows for each bolus and slowing down his eating. He did not wish to be considered for any type of surgical intervention and continues on CPAP at home. Follow up for three years has revealed no other disorder.

In this case there is good radiographic evidence to suggest that the limitation of neck movement and the large anterior cervical osteophytosis were due to diffuse idiopathic skeletal hyperostosis (DISH). Forestier's original description of the condition was confined to the spine but many extraspinal manifestations have now been described. The condition is common, occurring in 6%-12% of a necropsy population, and impaired glucose tolerance is often a feature.²

Although the patient had other features that predisposed him to develop the sleep apnoea syndrome including a large tongue and neck circumference, the C2/C3 level is a common site of obstruction in this condition.³ It seems highly likely that the bony mass contributed to occlusion of the oropharynx during sleep and videofluoroscopy suggests that it contributed significantly to the dysphagia; barium swallow examination, indirect laryngoscopy, and neurological investigation revealed no other cause for the dysphagia.

Dysphagia is a recognised symptom of cervical spine involvement in patients with DISH. Obstructive sleep apnoea is an association not described before although cases of stridor due to impingement of the osteophyte on the laryngeal vestibule have been reported.⁴

The case shows how a lateral cervical spine radiograph may be helpful in the diagnosis of patients with dysphagia and/or sleep apnoea without neurological signs. In view of the frequency of anterior cervical osteophytes in the older population it is imperative that other causes of dysphagia be excluded; oesophageal perforation after endoscopy in patients with large cervical osteophytes has been reported⁵ and barium examination of the oesophagus may be preferable.

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Horologagnosia: an impairment of the ability to tell the time

We report a 57-year-old male patient who had a right posterior stroke. A CT scan indicated extensive hypodensity within the territory of the right posterior cerebral artery. There were also lacunes in the right thalamus and corpus striatum bilaterally, as well as small scattered lesions, predominantly within the peripheral areas of white matter of the posterior frontal and parietal lobes, consistent with ischaemic changes due to small vessel disease. On admission to hospital he presented with decreased sensation and muscle weakness on the left side of his body, left homonymous hemianopia and left-sided visuospatial neglect. Neuropsychological assessments during the first three weeks after his admission to the hospital showed well preserved language, verbal reasoning, and verbal memory skills (average range or above). On a relatively easy picture recognition memory test he also performed satisfactorily. Left-sided visuospatial neglect was evident in his performance on line bisection, cancellation, and search tasks. He easily identified real objects and line drawings of objects or