of buspirone (15 and 30 mg) did not lead to increased Parkinsonian disability and a beneficial effect was maintained over two weeks of treatment. Subsequent cessation of buspirone for 48 hours led to immediate deterioration of dyskinesias. Both patients requested reintroduction of buspirone and have now been treated with constant benefit for two months.

The drug was generally well tolerated: three patients reported occasional light-headedness during the first days of dose increment and in one patient pre-existing benign visual hallucinations present with levodopa and apomorphine became more intense with 15 mg of buspirone. All patients experienced a heightened degree of relaxation and tranquillity.

These preliminary results provide some evidence that in a dose of 15–30 mg a day buspirone may be useful in producing selective anti-dyskinetic effects. Whether this occurs through its D2 antagonist actions or a non-specific anxiolytic action is unclear.

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Exacerbation of myasthenia by propafenone

We report generalised myasthenic symptoms developing in a patient with longstanding ocular myasthenia (OMG) treated with propafenone for cardiac dysrhythmias complicating ischaemic heart disease.

A 68 year old man had a 14 year history of ocular myasthenia. His ptosis and diplopia were well controlled on pyridostigmine 660 mg daily. He had angina and had suffered three episodes of myocardial infarction. Two years before admission he developed a sudden right hemiplegia. This was thought to be of embolic origin and he was anticoagulated with warfarin.

He was admitted with palpitation and episodes of presyncope. He was found to be in atrial fibrillation with frequent ventricular ectopics and runs of ventricular tachycardia (VT). In addition to pyridostigmine and warfarin, he was receiving frusemide 40 mg and captopril 37.5 mg daily. Three days later propafenone 450 mg daily was added.

Within a few hours of starting the propafenone, the patient and his relatives noted a marked increase in ptosis and diplopia. For the first time, he developed features of generalised myasthenia with dysarthria, dysphagia and generalised limb weakness. He also developed dyspnoea although this may have been partly of cardiac origin. Two weeks after admission a perma-

nent cardiac pacemaker was inserted because of severe sinus bradycardia and the propafenone was stopped. There was prompt improvement in the diplopia and dyspnoea and the patient reported marked improvement in well-being. Seven days later he was readmitted with an infected haematoma in the pacemaker site. Tachydysrhythmias were briefly treated with amiodarone and disopyramide. He then collapsed with VT and required ventilation. There was deterioration in his myasthenia and prednisolone 60 mg daily was started. He subsequently made a good recovery. His myasthenia is well controlled on prednisolone 25 mg on alternate days and the pyridostigmine has been withdrawn.

Although, by definition, the clinical disturbance in OMG is confined to the external ocular muscles, there is strong evidence for a widespread sub-clinical disturbance of the neuromuscular junction in other striated muscles.¹ Propafenone is a class Ic anti-arrhythmic drug, blocking fast sodium channels in cardiac conducting tissue, with weaker β -blocking activity.² It is suggested that the former of these actions may interfere with the generation or propagation of the motor endplate potential. This effect is presumably insignificant in the normal subject but impor-

tant if neuromuscular transmission is already compromised. The drug has been in clinical use since 1977 and we are not aware of any published reports of adverse effects of this type. The manufacturers are aware of five instances of myasthenic-like reactions which are not well documented (E Chong, personal communication, 1990). A case of extraocular muscle palsy has been reported in a patient receiving the related drug etafenone but this disturbance was not edrophonium-responsive.³

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Unsuccessful treatment of subacute sclerosing panencephalitis treated with transfusion of peripheral blood lymphocytes from an identical twin

Subacute sclerosing panencephalitis (SSPE) is a rare and invariably fatal illness of childhood. Because of its association with various immunological abnormalities immunotherapy has been attempted in the past. We report our experience with a case of SSPE in one of two identical twins in whom treatment with transfusion of lymphocytes from the healthy twin was unsuccessful.

The patient, a 19 year old girl, presented with a ten months history of involuntary movements, mental deterioration and personality change. The onset of her symptoms was insidious and there was no fever, headaches or other symptoms at any stage of her illness. Her initial symptoms were brief, sudden jerky movements of the limbs. A few weeks later she became forgetful, emotionally labile and incontinent of urine. The involuntary movements also increased in frequency and severity and spread to involve the face. Over the following few months her mental function progressively deteriorated and she became childish and also increasingly dependent on others for daily living activities.

She had uncomplicated measles in early childhood but she was otherwise healthy. Her family history was non-contributory. The patient had an identical twin sister.

When seen at our hospital 10 months after her initial symptoms she had marked intellectual deterioration to the extent that a formal

assessment of mental function was not possible. There were repetitive cries and utterances and stereotyped myoclonic jerks. Her tendon reflexes were symmetrically brisk in all limbs and both plantar responses were extensor. There were also multiple spider naevi. The rest of the physical examination was unremarkable.

Routine investigations were normal. EEG demonstrated repetitive stereotyped high voltage delta activity which occurred every 6–7s and was synchronous with the involuntary movements, findings which are typical of SSPE. A brain CT scan was normal. CSF protein was 0.26 g/l with normal cells and glucose. Oligoclonal bands were detected in the CSF. The CSF IgG percentage of total protein was 28.2% and IgG/albumin index was 2.48 (normal values are <10% and 0.22–0.66, respectively). Measles antibody titre was 1:2048 in CSF and 1:32 in serum. Peripheral blood lymphocyte (PBL) subsets were normal (table).

The patient was transfused with 300 ml of PBL from her healthy ABO and HLA identical twin sister. This procedure was repeated three days later. Serial EEGs following transfusion were similar to that at presentation. Repeated CSF examinations following transfusion were also similar to the pre-treatment values but PBL subsets measurements showed a significant reduction in total T lymphocytes and also in T helper cells (table). Despite treatment, the patient's condition continued to deteriorate and she died five weeks later.

Life-long persistence of the measles virus

Table Peripheral blood lymphocyte subsets before and after treatment

PBL						CSF	
Total T	T(H)	T(S)	B	NK	Protein	Ig%	Ig/albumin
71 + 6.4	48 + 3.9	23 + 5.4	11 + 3.9	10 + 5.3		<10	0.22–0.66
74	43	29	9	8	0.26	21.7	1.67
54	31	24	10	16	0.16	28.2	2.48
					0.20	25.3	2.08

in SSPE is well recognised but the reason for this is not clear. An attractive hypothesis is that a defect in immune mechanisms accounts for this phenomenon. In a detailed study of a large group of children with SSPE, Behan and Behan¹ have demonstrated a subtle abnormality of PBL protein synthesis in these patients. This abnormality appears to be an intrinsic defect of lymphocytes which is not due to the presence of blocking factors or an abnormality of phytohaemagglutinin receptors and is probably caused by the persistent measles virus. A similar defect of lymphocytes was observed in individuals who had received the measles vaccine.² Transfusion with compatible lymphocytes therefore seemed a logical form of treatment. However, this did not influence the clinical course of the disease in our patient and there was no improvement in the EEG or measles anti-body titres. In fact, the only change noted was a reduction in the total numbers of T cells and T helper lymphocytes.

Our incomplete understanding of the pathogenesis of SSPE has led to many unsuccessful previous attempts to stimulate or suppress the immune function. These included thymectomy, use of transfer factor, interferon and plasma exchange. Our experience with transfusion of lymphocytes in this case adds more evidence that the presently available immunotherapy is of no value in SSPE.

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Peripheral neuropathy as a complication of neuroleptic malignant syndrome

Neuroleptic malignant syndrome (NMS), an idiosyncratic reaction to treatment with neuroleptic drugs, is characterised by diffusely increased muscle tone, altered consciousness, hyperthermia and instability of the autonomic nervous system.¹ Only three cases of polyneuropathy in patients with NMS are known, one with unequivocal demyelinating² and two with no accurately classifiable neuropathy.^{2,3} We report a patient with NMS complicated by peripheral neuropathy of axonal type.

A 35 year old woman presented with severe rigidity and a temperature of 42.5°C after four weeks of treatment for hypomania with haloperidol and procyclidine and later, because of disabling Parkinsonian symptoms, sulpiride. On admission to the intensive care unit she was alert and cooperative but unable to move, phonate, swallow saliva or cough. Her muscle tone was grossly increased, there was a marked Parkinsonian tremor, reflexes were brisk and symmetrical. Apart from a

well demarcated decubital ulcer on the right heel examination revealed no obvious focus of infection (*E coli* was grown from urine culture and staphylococcus aureus from the heel swab; the white cell count was elevated to 13.5×10^9 , but blood cultures were negative). The creatinine kinase was elevated to 600 IU/l; other investigations including arterial blood gases, chest radiograph and routine biochemistry were unremarkable.

Although treatment with broad spectrum antibiotics, bromocriptine and dantrolene led to some improvement in muscle tone, her pyrexia only resolved when she was paralysed and ventilated for aspiration pneumonia five days after admission. When paralysis was reversed 48 hours later pyrexia and rigidity recurred, but then the patient displayed active resistance and catatonic posturing instead of Parkinsonian rigidity. This responded well to a series of three electroconvulsive shocks and two weeks after admission she was well enough to be transferred to a medical ward.

Her mental state and muscle tone were now normal, she was able to speak a few words and she soon managed to swallow liquids. All her muscles ached, she was unable to lift her limbs from the bed and passive movement was painful. There was generalised wasting of all muscle groups and tendon reflexes were difficult to elicit. The power in her limbs slowly improved, but four weeks after admission she was still too weak to stand. After six weeks she complained of pain in her right foot. Examination showed footdrop with loss of the ankle jerk and sensation to pinprick in a stocking like distribution. A few days later similar symptoms occurred on the left side. Her weakness gradually resolved, but the paraesthesiae in the right foot as well as the footdrop persisted. Fifteen weeks after admission she was independently mobile and discharged home.

Neurophysiological studies were first performed 14 weeks after admission. Muscle compound potentials from the small foot muscles were absent or very reduced in amplitude (0.4 mV). Motor conduction velocity was normal where measurable (tibial nerve 45 m/s). Sensory nerve action potentials were normal or of reduced amplitude (3 μ V). Sensory nerve conduction velocity was within normal limits (sural nerve 36 m/s). Fibrillations and positive sharp waves at rest and a reduced amount of motor unit action potentials were recorded on electromyography (EMG) in the peripheral muscles of both legs, but were more prominent on the right side. Repeat neurophysiological studies three months later showed an improvement. However, there were still signs of denervation in both lower limbs and the right sural sensory nerve action potential was absent.

This is the first report of peripheral neuropathy of axonal type in a patient with NMS. Both "critical illness" as such and the NMS itself may be implicated in its aetiology.

Axonal neuropathy was first recognised as a complication of critical illness by Rivner *et al*⁴ and Roelofs *et al*⁵ in 1983 and was fully described by Bolton *et al* in 1984⁶ who subsequently reported 19 cases.⁷ Neuropathy was initially suspected because of failure to wean patients from the ventilator and the diagnosis was then made by EMG or necropsy examination. Unifying features were onset about one month after admission to the intensive care unit, flaccid tetraparesis with areflexia, septicaemia, high pyrexia, multiorgan failure, treatment with multiple

antibiotics and, in the nine survivors, complete resolution of the neuropathy within three to six months. No specific aetiological agent could be identified, and a circulating toxin as the cause of both multiple organ failure and neuropathy was proposed. Six patients with a very similar presentation were reported by Lopez Messa and Garcia in 1990⁸ and a disorder of the oxidative metabolism secondary to infection was proposed. Williams *et al*⁹ describe two further cases and speculated on the neuropathy could represent an atypical form of Guillain-Barré syndrome.

In 1987 Lycklama *et al*¹⁰ reported 13 patients with flaccid areflexic tetraparesis and failure to wean from the ventilator. Although a high pyrexia was present in all their cases, septicaemia could not be proved by blood cultures. EMG showed abundant spontaneous activity without significant slowing of conduction velocity and motor unit action potentials were increased in amplitude, but sensory potentials were not documented. Since the weakness recovered with resolution of the pyrexia it was attributed to muscle membrane dysfunction related to an inflammatory mediator such as cachectin.

The patient we report does not readily fit into either group. Although she was critically ill, pyrexial and septicaemic, she did not develop multiple organ failure, was only ventilated for three days and weaning was no problem. Coincidental metabolic diseases were excluded and there was no exposure to toxins or drugs known to produce neuropathy. As in the described cases of critical illness polyneuropathy, a toxic factor active during the acute phase of the illness is the most likely aetiological factor. In view of the differences discussed above, this may be specific to the neuroleptic syndrome itself, but other aetiological factors such as persistent hyperpyrexia, septicaemia or an unidentified toxin cannot entirely be excluded. Further cases are needed to establish whether polyneuropathy is indeed a specific complication of NMS or just a non-specific manifestation of critical illness.

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