

tonic seizures associated with contralateral paraesthesia, they postulated transversely spreading activation between axons in the spinal cord as the mechanism. Similarly, Matthews⁷ proposed that the underlying pathophysiology in paroxysmal attacks in multiple sclerosis is abnormal lateral axonal spread of excitation in plaques. A normally transmitted impulse, on reaching a plaque of demyelination, depolarises a neighbouring demyelinated axon. This ephaptic conduction leads to the attack, the nature of which is dependent on the afferent or efferent axon involved. Osterman and Westerberg⁸ explain how transversely spreading activation of axons within a partially demyelinated plaque accounts for various paroxysmal phenomena by describing in detail the relevant anatomy of the spinal cord and brain stem.

Thus, paroxysmal attacks in multiple sclerosis are considered to be due to axonal discharge rather than neuronal discharge through usual anatomical and physiological connections. Although the beneficial effect of the anticonvulsant drug carbamazepine seems to suggest that paroxysmal attacks in multiple sclerosis might be due to focal epilepsy, carbamazepine has effects on the axonal membrane thereby blocking ephaptic conduction⁹ as well as its better known effects on neuronal discharge.

D A GORARD,
F B GIBBERD

Department of Neurology,
Westminster Hospital,
Dean Ryle Street,
Horseferry Road,
London SW1P 2AP,
United Kingdom

References

- 1 Matthews WB, Acheson ED, Batchelor JR, Weller RO. *McAlpine's Multiple Sclerosis*. Edinburgh: Churchill Livingstone, 1985; 111-6.
- 2 Twomey JA, Espir MLE. Paroxysmal Symptoms as the first manifestations of multiple sclerosis. *J Neurol Neurosurg Psychiatry* 1980;43:296-304.
- 3 Poser CM, Paty DW, Scheinberg L, et al. New diagnostic criteria for multiple sclerosis: guidelines for research protocols. *Ann Neurol* 1983;13:227-31.
- 4 Wolf P, Assmus H. Paroxysmale Dysarthrie und Ataxie: ein pathnomisches Anfallssyndrom bei multipler Sklerose. *J Neurol* 1974;208: 27-38.
- 5 Espir MLE, Millac P. Treatment of paroxysmal disorders in multiple sclerosis with carbamazepine. *J Neurol Neurosurg Psychiatry* 1970;33:528-31.
- 6 Ekbohm KA, Westerberg CE, Osterman PO. Focal sensory-motor seizures of spinal origin. *Lancet* 1968;i:67.
- 7 Matthews WB. Paroxysmal symptoms in multiple sclerosis. *J Neurol Neurosurg Psychiatry* 1975;38:617-23.
- 8 Osterman PO, Westerberg CE. Paroxysmal attacks in multiple sclerosis. *Brain* 1975;98:189-202.
- 9 Schauf CL, Davis FA, Marder J. Effects of carbamazepine on the ionic conductances of myxicola giant axons. *Pharmacol Exp Ther* 1974;189:538-43.

Development of HTLV-I associated myelopathy (HAM) in a seroconverted patient for antibody to HTLV-I

Sir: Seroconversion in recipients of transfused human T lymphotropic virus type-I (HTLV-I) antibody positive blood was reported by one of the authors (KO) in 1984.¹ Osame *et al* suggested that infection transmitted by blood transfusion could be a basis for the development of HTLV-I associated myelopathy (HAM).^{2,3} However, the development of HAM caused by blood transfusion has not been previously reported.

A 70 year old Japanese woman was admitted to our clinic on August 20 1988 in a lactic acidotic coma with hypoglycaemia caused by calcium-hopantenate.⁴ She had had an operation for a DeBakey type I dissecting aneurysm and had been given a blood transfusion on May 22, 1985. She had gradually developed spastic paraplegia six months to one year after the operation. From July 1986 she had been bed-ridden with complete paraplegia as well as sensory and sphincter disturbances. No orthopaedic abnormality was detected. On this admission, she recovered from the coma within nine days but the spastic paraplegia, sensory and sphincter disturbances remained unchanged. Magnetic resonance imaging (MRI) revealed no abnormality in the spinal cord. A high anti-HTLV antibody titre (1280) in the serum and cerebrospinal fluid (CSF) (320) was detected by an indirect immunofluorescence method,¹ indicating HAM. After checking the transfusion history, it was revealed that the patient had been in a follow up study for transfusion-transmitted infection of HTLV-I started in this hospital in 1981.

Anti-HTLV-I antibody was not detected before her operation but she became positive (antibody titre = 5 at one month, 80 at two months later). During her operation the patient received one unit of anti-HTLV-I antibody positive packed red cell (PRC, antibody titre = 640) and one unit of antibody positive fresh frozen plasma (FFP, antibody titre = 640), as well as antibody

negative 26 units of PRC and 10 units of FFP all of which were antibody negative. We believe this to be the first reported case of a patient developing HTLV-I HAM from a blood transfusion. To prevent similar occurrences a donor screening programme was set up in Japan in 1986.

YUJI SAKAI

HIROSHI YAO

SEIZO SADOSHIMA

MASATOSHI FUJISHIMA

KAZUO OKOCHI*

Second Department of Internal Medicine,
and the Clinical Laboratory,*

Faculty of Medicine,

Kyushu University,

Fukuoka 812, Japan

References

- 1 Okochi K, Sato H, Hinuma Y. A retrospective study on transmission of adult T cell leukemia virus by blood transfusion: Seroconversion in recipients. *Vox Sang* 1984;46: 245-53.
- 2 Osame M, Usuku K, Izumo S, et al. HTLV-associated myelopathy, a new clinical entity. *Lancet* 1986;i:1031-2.
- 3 Osame M, Izumo S, Igata A, et al. Blood transfusion and HTLV-I associated myelopathy. *Lancet* 1986;ii:104-5.
- 4 Noda S, Umezaki H, Yamamoto K, et al. Reye-like syndrome following treatment with the pantothenic acid antagonist, calcium hopantenate. *J Neurol Neurosurg Psychiatry* 1988; 51:582-5.

Parkinsonian symptoms in a patient with AIDS and cerebral toxoplasmosis

Sir: Extrapyramidal symptoms of bradykinesia, rigidity and tremor, have been reported as rare presentations of brain tumour,¹ subdural haematoma² and tuberculoma.³ We report the case of an AIDS patient with parkinsonian features due to bilateral basal ganglia toxoplasma abscesses.

In 1983 the patient, a 66 year old white female, had a resection of a right cystic hamartoma of the bile duct with incidental right adrenalectomy. During her stay in hospital, she required seven units of blood. She did well postoperatively until June 1984 when she developed a disseminated petechial rash. The platelet count was 4,000/mm³ and the laboratory investigations were consistent with an autoimmune thrombocytopenia. With high dose prednisone, the platelet count rose to 12,000/mm³. Incidental toxoplasma titres were drawn and revealed an IgG of 1:4096 and an IgM of 1:128. In

October 1984, two weeks before her final hospital admission, the patient began to complain of increasing fatigue, weakness and lethargy. Her family noticed she had less facial expression, as well as a tremor and a slow, shuffling, hesitating walk. Three days before admission, she developed a fever that was associated with increasing lethargy and confusion.

At the time of admission, examination revealed a motionless white female with her head rigidly flexed. Her face was expressionless with infrequent eye blinking, the mouth was slightly open and drooling. Her speech consisted of soft, barely intelligible monotonous which restricted the ability to examine her. There was a right pronator drift and cogwheel rigidity was noted bilaterally, but was more prominent on the left. The patient had increased deep tendon reflexes on the right with a positive Babinski on that side.

Laboratory studies showed a white blood cell count of $2,400/\text{mm}^3$ (42% P, 43% L, 5% M, 9% Eos) and a platelet count of $146,000/\text{mm}^3$. The serum electrolytes were normal. A lumbar puncture yielded: WBC = $34/\text{mm}^3$ (79% L, 9% M, 12% reactive lymphocytes), RBC = $12/\text{mm}^3$, glucose = 37mgs%, protein = 79mgs%, bacterial cultures and cytology were negative. Serum toxoplasma titres were IgG = 1:4096 and IgM < 1:16. CSF toxoplasma titres were IgG = 1:64 and IgM < 1:16. A brain CT revealed two small enhancing lesions in the anterior limbs of both internal capsules with surrounding oedema. The lesion on the right was slightly larger (fig). EEG showed frontal intermittent rhythmic delta activity with focal slowing at the mid temporal region on the left.

While in hospital, the patient's condition rapidly deteriorated during the course of a week. Her neurological examination deteriorated to the point that she was arousable only to deep pain and had anisocoria with a larger right pupil. Surprisingly, the patient was found to be HIV positive by ELISA. The result was confirmed by Western Blot. A presumed toxoplasma infection was treated with pyrimethamine and sulfadiazine beginning on the fifth day of admission. Steroids were administered to treat her brain oedema. With these therapies, the anisocoria resolved and the patient became more arousable. The following morning, a stereotactic biopsy was taken from the lesion located near the right caudate nucleus. The specimen showed necrosis, subacute inflammation, macrophages and plasma cells, and several toxoplasma cysts. Immunoperoxidase staining was positive. Two weeks following biopsy, physical examination revealed an arousable but con-

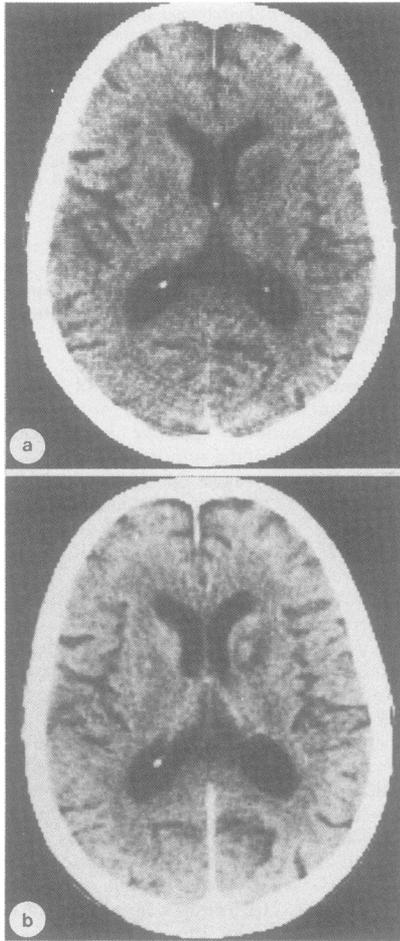


Fig. CT (a) of the brain without contrast and (b) with contrast showing two small enhancing lesions in the anterior limbs of both internal capsules with surrounding oedema.

fused patient with a spastic quadriplegia, worse on the left than right. Trials of sinemet and baclofen were unsuccessful. The patient then developed flexion contractures and decubitus ulcers despite physical therapy. Treatment with pyrimethamine and sulfadiazine was discontinued because the patient developed pancytopenia four weeks after the start of this regime. The patient's final days were complicated by pneumonia, a urinary tract infection and eventually septicæmia. She died four months after admission.

Several mechanisms can be postulated to account for the parkinsonian features in our patient: (a) interruption of the nigrostriatal

dopaminergic pathways travelling through the internal capsule; (b) mechanical pressure on the striatum or substantia nigra; (c) destruction of the striatal postsynaptic cells; (d) transient circulatory disturbances involving the anterior choroidal artery; (e) direct destruction of the substantia nigra by toxoplasma abscesses not seen on scan.

Poor clinical response to levodopa/carbidopa may be explained by direct destruction of the striatum. Garcia de Yébenes *et al* reported a significant decrease of caudate postsynaptic dopamine receptors which accounted for their patient's parkinsonism secondary to a cranipharyngioma.⁴

Reports of extrapyramidal movement disorders in AIDS patients due to toxoplasma abscesses are rare.^{5,6,7} The simultaneous occurrence of the toxoplasma lesions with the parkinsonian symptoms, the strategic location of the abscesses and the rapidity of the clinical course all point to toxoplasma as the aetiology of the movement disorder rather than direct involvement of the central nervous system by HIV. To our knowledge this is the first report of CNS toxoplasmosis presenting with parkinsonian features. These extrapyramidal and pyramidal signs, however, were superimposed on a diffuse encephalopathy.

ENRIQUE J CARRAZAN
EUGENE ROSSITCH
MARTIN A SAMUEL
From the divisions of Neurology
and Neurosurgery,
Brigham and Women's Hospital,
Harvard Medical School,
Boston, Massachusetts,
United States

Correspondence to: Enrique J Carrazan MD, Division of Neurology, Brigham and Women's Hospital, 75 Francis Street, Boston, Massachusetts 02115, United States.

References

- 1 Polyzoidis KS, McQueen JD, Rajput AH, *et al*. Parkinsonism as a manifestation of brain tumor. *Surg Neurol* 1985;23:59-63.
- 2 Sandyk R, Kahn I. Parkinsonism due to subdural hematoma. *J Neurosurg* 1983;58:298-300.
- 3 Blocq P, Marinresco G. Sur un cas tremblement parkinsonien hémiplegique symptomatique d'une tumeur du pedoncule cerebral. *CR Se Biol (Paris)* 1983;45:105-11.
- 4 Garcia de Yébenes J, Gervas J, Iglesias J, *et al*. Biochemical findings in a case of Parkinsonism secondary to brain tumor. *Ann Neurol* 1982;11:313-6.
- 5 Nath A, Jankovic J, Pettigrew LC. Movement disorders and AIDS. *Neurology* 1987;37:37-41.

Letters

- 6 Carrazana EJ, Rossitch E, Martinez J. Unilateral akathisia in a patient with AIDS and a toxoplasmosis subthalamic abscess. *Neurology* 1989;39:449-50.
- 7 Navia BA, Petito CK, Gold JWM, Cho ES, Jordan BD, Price RW. Cerebral toxoplasmosis complicating the acquired immunodeficiency syndrome: clinical and neuropathological findings in 27 patients. *Ann Neurol* 1986;19:224-38.

Tobacco-alcohol amblyopia: magnetic resonance imaging findings

Sir: Tobacco-alcohol amblyopia (TAA) is a condition occurring in smokers which causes progressive bilateral visual deterioration. It is commonest in middle-aged and elderly men and malnutrition and excessive alcohol consumption tend to increase the incidence and severity of the condition.¹ The characteristic visual deficit is a centro-caecal scotoma, with loss of colour vision being an early feature.¹

It has been suggested that TAA may be a consequence of the toxic effect of the cyanide constituent of tobacco smoke.¹ Cessation of smoking and hydroxocobalamin replacement usually result in visual improvement.² Pathological studies in TAA have failed to establish whether the primary location of the defect is retinal or in the optic nerve itself.³

Recent advances in magnetic resonance imaging (MRI) of the optic nerve have shown great sensitivity in the detection of optic nerve lesions. For example, in optic neuritis, lesions are found in 84% of clinically affected nerves.⁴ We recently reported abnormal MRI signal in 12 of 15 affected optic nerves in Leber's optic neuropathy (LON),⁵ a maternally inherited condition characterised by the acute or sub-acute onset of bilateral visual loss.⁶ To search for evidence of optic nerve involvement in TAA we have performed optic nerve and brain MRI.

Five patients with TAA were studied. All had typical bilateral centro-caecal scotoma, high tobacco and alcohol consumption,

negative findings for other causes of visual loss and improvement in visual acuities after reduction in smoking. In two patients some improvement in vision had already occurred by the time of MRI (table). Scanning was performed on a Picker 0.5T Superconducting MRI, with axial SE_{2000/60} brain images (5 mm contiguous slices), and coronal STIR (IR_{-1500/40/150}, 5 mm contiguous slices) optic nerve images, as in the Leber's study.⁵

Scans were examined by an experienced neuro-radiologist (BEK). All optic nerve images were normal, in contrast to the findings in LON where most optic nerve images showed either definite or equivocal abnormalities.⁵ One patient (Case 4) had small multiple high signal areas in the white matter, a non-specific finding in this age group.⁷

The results suggest that the optic nerve is not damaged in TAA, or that such damage that occurs is unlikely to produce abnormal MRI signal. However, given the sensitivity of MRI in other conditions, our findings do not provide evidence to support the suggestion that the primary insult in TAA is the optic nerve itself, and are consistent with a proposal from electrophysiological studies that retinal damage makes a significant contribution to the visual loss in TAA.⁸ From the point of view of differential diagnosis we are able to conclude that MRI in TAA is usually normal and therefore may be useful to exclude other causes of visual loss when indicated.

It is interesting to compare these results with those mentioned above in LON.⁵ Recently a specific point mutation in mitochondrial DNA has been proposed as the cause of LON.⁹ This would result in an energy deficit similar to that caused by chronic poisoning with respiratory inhibitors, such as the cyanides⁹ which are found in tobacco smoke.

There are significant clinical differences between TAA and LON. The results reported here provide further evidence against a common aetiology for the two disorders.

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AG KERMODE
GT PLANT
DH MILLER*
BE KENDALL
WI McDONALD
*The Multiple Sclerosis
NMR Research Group,
Institute of Neurology,
Queen Square, London and
Department of Medicine,*
Wellington University,
New Zealand*

Correspondence to: Dr Allan G Kermode, NMR Research Group, Institute of Neurology, Queen Square, London WC1N 3BG, United Kingdom.

References

- Freeman AG. Optic neuropathy and chronic cyanide intoxication: a review. *J R Soc Med* 1988;81:103-6.
- Krumsiek J, Kruger C, Patzold U. Tobacco-alcohol amblyopia neuro-ophthalmological findings and clinical course. *Acta Neurol Scand* 1985;72:180-7.
- Victor M, Dreyfuss PM. Tobacco-alcohol amblyopia. *Arch Ophthalmol* 1965;74:649-57.
- Miller DH, Newton MR, van der Poel JC, et al. Magnetic Resonance Imaging of the optic nerve in optic neuritis. *Neurology* 1988;38:175-9.
- Kermode AG, Moseley IF, Kendall BE, Miller DH, McManus DG, McDonald WI. Magnetic resonance imaging in Leber's optic neuropathy. *J Neurol Neurosurg Psychiatry*. (in press).
- Nikoskelainen E. The clinical findings in Leber's hereditary optic neuropathy. Leber's disease. *Trans Ophthalm Soc UK* 1985;104 (pt 8):845-52.
- Kertesz A, Black SE, Tokar G, Benke T, Carr T, Nicholson L. Periventricular and subcortical hyperintensities on magnetic resonance imaging. *Arch Neurol* 1988;45:404-8.
- Ikeda H, Tremain KE, Sanders MD. Neurophysiological investigation in optic nerve disease: combined assessment of the visual evoked response and electroretinogram. *Br J Ophthalmol* 1978;62:227-39.
- Singh G, Lott MT, Wallace DC. A mitochondrial mutation as the cause of Leber's Hereditary Optic Neuropathy. *N Engl J Med* 1989;320:1300-5.

Opsoclonus-myooclonus following the intranasal usage of cocaine

Sir: A wide variety of neurological complications have been reported with cocaine usage. Opsoclonus-myooclonus is an uncommon syndrome thought to be of cerebellar-brain-

Table Visual acuities (VA) and colour vision on Ishihara plates refer to the worst affected eye.

At presentation	Age	VA	Correct plates Ishihara	VA At scan	Duration of symptoms At scan	Final VA
1 M	57	1/60	0/14	6/36	7 months	6/36
2 M	50	6/60	3/12	6/60	5 months	6/6
3 F	42	6/12	6/14	6/5	2 months	6/5
4 M	54	6/36	0/14	6/36	9 months	6/6
5 M	39	6/24	9/14	6/12	10 months	6/12