malities; in particular there was no arachnoid cyst. Consequently, a third blood patch (20 ml) was carried out at a higher level (L2) than the previous one, guided by the radionuclide cisternography findings. The patient was headache free a few minutes later and able to ambulate the next day. Postural headache had not recurred within 12 weeks of follow up and the patient returned to work full time. Follow up brain MRI with gadolinium showed complete resolution of the subdural hygroma but persistence of thin meningeal enhancement. However, its intensity was smaller than that seen on the MRI at admission.

Intracranial hypotension associated with postural headache is a common clinical phenomenon after lumbar puncture, but it may also occur spontaneously; a more rarely reported syndrome.^{1,2} Our patient fits well with the typical description of SIH—namely, spontaneous frontal headache exacerbated by erect posture and relieved by supine position. It may be associated with nausea and vomiting; less commonly, patients experience vertigo, diplopia, photophobia, or neck stiffness.² If the SIH is unrecognised, evaluation of the patient's headache may include lumbar puncture that may allow measurement of the CSF pressure. This was not performed in our patient but it is usually low, less than 60 mm H₂O. Because the CSF in SIH sometimes contains an abnormal number of white blood cells, or high protein content, or both,² suspicion of meningeal infection or tumour may lead to further evaluation, including a contrast enhanced MRI.

Several recent reports¹⁻³ have shown subdural hygromas and diffuse meningeal enhancement on MRI with gadolinium associated with this syndrome. In all reported cases, the enhancement disappeared as clinical symptoms resolved. This may be related to inflammation of the pachymeninges secondary to reversible disturbance of the choroid plexus,¹ to a dural venous dilatation in response to low CSF pressure,³ or to a fibrocollagenous proliferation of the leptomeninges.⁵ The last is consistent with our finding because of the persistence of enhancement three months after disappearance of clinical symptoms. Such an enhancement can lead to diagnostic confusion. However, the clinical presentation should be sufficient to make the distinction in most cases.

Spontaneous spinal CSF leaks are now increasingly recognised as a cause of postural headache associated with intracranial hypotension.^{1,2,6} However, in most of the cases, the site of the CSF leak may be difficult to determine and will remain unknown.² It has been reported that small dural tears can occur at the nerve roots from even minor trauma; indeed, there is often a history of a trivial fall, vigorous exercise, or violent coughing preceding the onset of the headache in many cases of SIH.² The sneezing and the altitude with possible depressurisation may have been a promoting circumstance for our patient.

Radionuclide cisternography has been used to visualise CSF leaks in SIH,²⁻⁴ showing early accumulation of radioactivity in the bladder and less activity than expected over the cerebral convexities, suggestive of unusually rapid uptake of the tracer into the circulation.^{2,4} The characteristic finding is the diffusion of tracer into the extra-arachnoid space, outlining the spinal roots.

The headache in SIH usually resolves spontaneously with strict bed rest, some-

times with analgesics and antiemetics. More aggressive treatment may be necessary when the headache persists or is incapacitating. According to therapies for postdural puncture headache, an autologous epidural blood patch is often used.^{1-3,6} Pain relief is often immediate but sometimes several blood patches are needed, as we found. It is now recommended that the precise level of the leak is identified with contrast or isotope cisternography in patients in whom blood patch therapy has failed.

In conclusion, SIH features are well established. Misleading MRI findings should suggest the diagnosis, and a search for a cryptic CSF leak should be considered in patients with unexplained postural headache, especially when treatment has failed. It is important to bear in mind that several blood patches are often needed.

LAURENT SPELLE
ANNE BOULIN
LAURENT PIEROT

Department of Neuroradiology

PHILIPPE GRAVELEAU

Department of Neurology

CATHERINE TAINQUIER

Department of Nuclear Medicine, Hôpital Foch,
40 rue Worth, BP 36, 92151 Suresnes Cedex, France

Correspondence to: Dr L. Pierot, Department of Neuroradiology, Hôpital Foch, 40 rue Worth, BP 36, 92151 Suresnes Cedex, France.

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Transient multiple cranial nerve involvement as a first sign of macrophage activation syndrome

In 1979, Risdall *et al*¹ described a disorder characterised by histiocytic hyperplasia, preponderant hemophagocytosis, and proliferation of macrophage cells. The term macrophage activation syndrome was proposed. Clinical symptoms are heterogeneous and not specific.² Neurological signs are rare. We report a man with macrophage activation syndrome in whom the first signs were multiple cranial nerve involvement.

A 43 year old man developed left peripheral facial nerve palsy. Three days later, intrabuccal dysaesthesia associated with hypoaesthesia in the second branch of the trigeminal nerve occurred. Eight days later, he developed left hypoacusia and a right T8 band of hypoaesthesia. At this point, laboratory tests, CT, and cerebral MRI were normal; a CSF examination disclosed normal protein concentrations and 10 lymphocytes/ μ l. In the third week, the signs disappeared, but left optic neuritis occurred. Antibacterial and antiviral, including HIV, serologies were negative except for Epstein-Barr virus suggesting a latent infection. Although Borrelia serology was negative, ceftriaxone (2 g/day) was given for three weeks. Two months after the onset of the symptomatology, left eye

vision had improved but right optic neuritis appeared. He lost 8 kg over two months; his temperature was 38°C. Neurological examination showed only a bilateral asymmetric visual loss. Laboratory test results were white blood cells $6.4 \times 10^9/l$, haemoglobin 13.4 g/dl, platelets $200 \times 10^9/l$, fibrinogen 2.30 g/l. Electrolytes, renal, and hepatic variables, and lactate dehydrogenase were normal. Systemic lupus erythematosus, rheumatoid arthritis serologies, and biological variables of sarcoidosis were all negative. A second CSF examination and another cerebral MRI with gadolinium injection were normal. A few days later an erythematous skin rash occurred on his legs; biopsy showed leukocytoclastic vasculitis. His fever increased and corticosteroid therapy was started. Temperature returned to normal. However, in the third month fever reappeared, with weight loss and liver failure. Pancytopenia appeared, platelets decreased to $20 \times 10^9/l$, white blood cells to $3.5 \times 10^9/l$, haemoglobin to 8.1 g/dl, and triglyceridaemia increased to 7 mmol/l. Serum tumour necrosis factor α (TNF α) concentrations were six times higher than normal. Finally, bone marrow aspiration established the diagnosis of macrophage activation syndrome. Macrophage cytoplasm contained erythroblasts, neutrophils, and platelets (fig 1). Atypical lymphocytes were also present (fig 2), suggesting malignant T lymphoma. This was confirmed by marrow biopsy. Subsequently, hepatomegaly and splenomegaly occurred. Despite aggressive therapy with bolus steroids, the patient died from myocardial incompetence and bilateral lung infiltration. Postmortem examination was not performed.

Diagnosis of macrophage activation syndrome may be evoked in the presence of heterogeneous non-specific clinical symptoms and biological abnormalities. Asthenia, weight loss, sweating, and fever can be the first signs of the disease.² But what clearly indicates macrophage activation syndrome onset is a rapidly deteriorating clinical status. Pancytopenia, regenerative anaemia, severe thrombocytopenia, hypertriglyceridaemia, and hyperferritinaemia usually occur.² Diagnosis is established by bone marrow examination showing the most characteristic signs—that is, clearly differentiated macrophages presenting abnormal signs of active haemophagocytosis. No clear aetiopathogenic explanation exists for the occurrence of macrophage activation syndrome but it can occur after infections (Epstein-Barr virus, HIV, bacterial and parasitic pathogens),² in patients with an underlying disease: immune deficiency, solid tumours, inflammatory diseases, haemopathies,² lymphomas.⁶ Macrophage activa-

Figure 1 Macrophages containing numerous erythroblasts and platelets. Myelogram (originally $\times 100$).

Figure 2 Lymphoid cells with azurophilic granules. Myelogram (originally $\times 100$).

tion syndrome has a poor prognosis, with a 50% mortality rate. The nervous system is seldom involved in the syndrome. If such involvement appears, it usually does so towards the end of the course of the disease. A patient with sensorimotor neuropathy related to axonopathy and occasional demyelination has been recently reported, but in the context of a fulminant illness.⁴

The distinctive feature of our finding is the occurrence of transient cranial nerve involvement as the probable first sign of macrophage activation syndrome. It could be claimed that the symptomatology is related to the lymphoma. However, very little is known about neurological complications in T cell lymphoma, and their occurrence is probably rare.⁵ Kaufman *et al.*⁵ have reported an involvement of the nervous system in 14 patients out of 104 cases, eight being related to direct complications. In only one patient, palsy of the sixth cranial nerve was the first sign. Neurological signs occurred between 10 and 102 weeks after diagnosis of lymphoma.

If polyneuropathy occurs in T cell lymphoma it is due to infiltration and the clinical evolution is usually stereotyped with slowly evolving sensorimotor signs.⁶ Because there was no postmortem examination in our case, infiltration of peripheral nerves cannot be eliminated; but it is unlikely, considering the improvement in neurological signs. Meningoradiculitis could be evoked, but if that were so, there would have been a worsening of the initial signs.⁶ Moreover, CSF examination and cerebral MRI were normal. All these indications lead us to suggest that the neurological signs in our patient could be related to a remitting/relapsing neuropathy due to non-cutaneous T cell lymphoma infiltrating peripheral nerves, to vasculitis or, more likely, to the neurotoxic effects of cytokines. Cytokines, especially TNF, are secreted in large amounts in macrophage activation syndrome, and TNF can induce general side effects and cerebral damage.⁷

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L RUMBACH
E BERGER
L TATU
T MOULIN
Department of Neurology
JY CAHN
Department of Haematology
JL DUPOND
Department of Internal Medicine

F SCHILLINGER
Blood Transfusion Center, University Hospital
Minjoz, Besançon, France

Correspondence to: Dr L Rumbach, Service de Neurologie, Centre Hospitalier J Minjoz, 25030 Besançon Cedex, France.

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Paraneoplastic opsoclonus associated with cancer of the gall bladder

Opsoclonus is an ocular dyskinesia consisting in ample, conjugated, arrhythmic, multidirectional ocular movements which persist even with the eyes closed.¹ This syndrome has been described during the course of different cancers.² In infancy, neuroblastoma is the cancer most often associated with opsoclonus (in 2% to 7% of the cases).³ In adults, opsoclonus is less common. Nevertheless, it is associated with a tumour in 20% of cases.⁴

Here, we report a case of opsoclonus associated with a cancer of the gall bladder.

A 72 year old, treated hypertensive woman, experienced the sudden onset of vertigo followed by impaired consciousness. At initial examination, her Glasgow score was 13. She showed opsoclonus associated with a bilateral kinetic cerebellar syndrome. The cranial nerves were intact and there was no sensory or motor deficit. Complete physical examination only showed conjunctival icterus.

Brain MRI showed a left frontal angioma measuring 7 mm in diameter without any impingement on cerebral parenchyma; the brain stem was normal. Two spinal taps were normal. A chest radiograph was normal. Laboratory studies showed an increase in alanine aminotransferase (43 IU/l), γ -glutamyl transferase (100 IU/l), and CA 19-9 (111 kIU/l). Abdominal ultrasound showed a heterogenous, polyploid tumorous structure in the gall bladder associated with hypoechogenic lesions in the liver and a thrombosis of the portal vein. Abdominal CT disclosed thickening of the left lateral wall of the gall bladder, liver metastases, and hilar adenopathy. Liver biopsy showed a sclerosing, moderately differentiated adenocarcinoma most suggestive of a pancreatobiliary origin.

Tests for anti-Hu, anti-Ri, and anti-Yo antibodies were negative. Immunoglobulin IV (0.4 g/kg/day during five days) and cortisone (Solumedrol, 0.5 g/day for five days) was ineffective. The patient died five weeks later. No necropsy was performed.

The diagnosis of opsoclonus remains clinical. It usually has an abrupt onset.³ It is probably the result of a diencephalic or mesencephalic lesion with production of the abnormal movement by removal of normal saccadic generator inhibition.² Dysfunction of the pause neurons, which play a part in inhibiting the phasic neurons responsible for the appearance of jerks, is likely. The frontal angioma does not explain the opsoclonus. The opsoclonus was considered paraneoplastic because it was not associated with an infectious or tumorous rhombencephalitis. Other possible causes (toxic, metabolic, degenerative,⁴ and vascular⁵) were excluded. The normal MRI, lumbar punctures, and the absence of anti-Ri antibodies, which have been associated with paraneoplastic opsoclonus occurring with carcinomas of the breast,⁵ did not cast doubt on the diagnosis. Breast cancer and small cell cancer of the lung represent 70% of reported cases associated with opsoclonus in adults³ and are sometimes discovered during necropsy.⁴ In the present case, the histological differentiation seen during liver biopsy was strongly suggestive of a primary lesion in the gall bladder. Therefore, it is not likely that the lesions discovered were metastases from one of the above cited cancer localisations.

The possibility of this association means that the gall bladder should be included in the investigation of a paraneoplastic opsoclonus.

P CORCIA
B DE TOFFOL
C HOMMET
D SAUDEAU
A AUTRET

Neurology Clinic, CHU Bretonneau, Tours, France

Correspondence to: Dr Corcia, Clinique Neurologique, CHU Bretonneau, 2 bis Bd Tonnelé, 37044 Tours Cédex, France.

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Lethal hyperoral behaviour from the Klüver-Bucy syndrome

Clinicians have not sufficiently appreciated the danger of hyperoral behaviour in neurological disorders. A major cause of this behaviour is the Klüver-Bucy syndrome.¹ Originally described in monkeys after anterior bitemporal lobectomies, this syndrome includes indiscriminate dietary behaviour and a tendency to examine objects by mouth.² The complete syndrome also results in placidity, hypersexuality, hypermetamorphosis or a tendency to attend to any visual stimulus, and visual agnosia. We report two patients with the Klüver-Bucy syndrome who died as a consequence of their hyperoral behaviour.

Patient No 1 was a 40 year old man with epilepsy who developed persistent hyperoral behaviour after prolonged status epilepticus lasting several hours. On resolution of the seizures and recovery of consciousness, he