Letters

Transient global amnesia and migraine in twin sisters

Sir: In 1958, Fisher and Adams 1 coined the name “Transient global amnesia” for a syndrome already described simultaneously by Bender 2 and Guyotat and Courjon 3 in 1956. The physiopathology of transient global amnesia is still uncertain 4 and the role of migraine has been discussed by some authors. 5, 6 Three familial observations of transient global amnesia have been previously published. 7 - 9 We report the case of twin sisters who experienced attacks of transient global amnesia and migraineous accompaniments.

The first sister suffered from classic migraine, mostly left-sided, since her adolescence. In February 1980, at the age of 64 years, she experienced her first episode of amnesia. At 10 a.m. she felt unreal and was disoriented for place and time. She repeated the same questions over and over. She was unable to recognize her house or physician. Retrograde amnesia seemed to extend for several years. At 2 p.m., 4 hours later, neurologic examination was otherwise normal. She progressively recovered but complained of a violent left-sided headache relieved by the administration of dihydroergotamine. Patchy amnesia persisted for 24 hours. EEG showed left temporal slow waves; ECG, blood chemistry and cranial CT scan were normal. A second spell occurred 5 years later. At 69 years of age, she had been in Newport (U.S.A.) for ten days to attend the marriage of her nephew. On the day of the ceremony, shortly after awakening she did not feel well. She could not recognize her dress and repeatedly asked the same questions about her whereabouts. At lunch, she had difficulty in identifying her nephews. Short-term memory deficiency lasted for about 2 hours but she remained amnesic for events between supper of the previous evening till 2 p.m. of the next day. She suffered a severe migraine attack immediately thereafter. Between these two transient global amnesia episodes, two migraineous accompaniments occurred. The first at 65 yr when a spell of alexia and aphasia was followed by severe headaches. The second at 66 yr, when she had an episode of blurred vision on the right visual field without headache. Again, neurological examination was otherwise normal as well as Doppler examination of the carotid arteries.

The second twin has also been a typical left-sided migrainous patient since adolescence. At 68 years of age, a few minutes after getting up on the morning of the 24 December 1984, she felt faint and was disoriented. She was bewildered by the presence of her physician and repeatedly said “but it's Christmas!” . She remained confused the rest of the day, but recovered completely by the next day except for a persisting amnesia for the previous day. No headaches were noted. Eleven years earlier, when aged 57 yr, she had experienced the same day three successive and identical episodes of alexia and aphasis. The last spell had been followed by occipital headaches and vomiting. The following day she felt a strange sense of lightness in her right leg. Neurological examination was normal. An EEG showed left temporal slow waves; left carotid arteriography showed no stenosis of the internal carotid artery.

These twin sisters, both right-handed, have the same physical appearance, the same blood groups (O Rh+ CCDee Cw-), same HLA variants. They have two other sisters, out of four, who also suffer from classic migraine.

Both the twins suffered transient global amnesia. In view of its low frequency, estimated at least to 2.75/100,000/year by Miller 10, a coincidence is improbable. To our knowledge only three familial observations have been reported and none included twins. 7 - 9 In two reports 7, 8 the patients were not migrainous and the clustering of cases was attributed to vertebro-basilar atheromatosis or to a particular susceptibility of infero-medial parts of temporal lobes. The third familial case 7 concerned migrainous siblings, one having experienced transient global amnesia, the other a transient partial amnesia. The occurrence of transient global amnesia in our homozygotic twins suggests a genetic component.

Both twin sisters had suffered from mainly left-sided migraine since adolescence. Later, both of them experienced episodes of alexia, dysphasia, right hemianopsia, right-sided sensory disturbance followed by headache. According to Fisher’s criteria 11, these symptoms, the absence of carotid atheroma and 13 years of benign evolution in at least one twin make them migrainous manifestations. The two transient global amnesia spells of the first sister were followed by left headaches and left EEG dysrhythmia, making a migrainous manifestation probable. The second twin had no headache after transient global amnesia. Feely et al 12 studied confusional states occurring in members of familial hemiplegic migraine. They noted absence of headache in most cases and concluded that a familial history was an important clue for diagnosis. Accordingly a close relationship between migrainous manifestations and transient global amnesia appears likely in both twins. Moreover similarities in migrainous manifestations in homozygotic twins have been sometimes noted. 13 - 14

In the history of these twin sisters, transient global amnesia and migraine seem linked, possibly sharing a common physiopathology like Leao’s spreading depression, as suggested by Olesen and Jörgensen. 15 - 16 A genetic origin is not usually considered; 17 low penetrance and late onset of the disease, as well as low recurrence rate (4.7% /year) 18 could have contributed to mask this factor. Further reports of pairs of twins, concordant or not for transient global amnesia, should help to prove this genetic component.

We thank Dr C Verellen, Department of Genetics, St Luc Hospital UCL, Brussels for the genetic study; Pr Devic (Lyon) and Dr Dale (physician) for communications of their observations of the migrainous manifestations and transient global amnesia of the second case and Dr JM Leblanc for his help in translation.

MIM DUPUIS
PH. PIERRE RE GONSETTE
Department of Neurology,
St Pierre Hospital,
1340 Ottignies,
Louvain-la-Neuve, Belgium

References


Muscle histology of hypocalcaemic myopathy in hypoparathyroidism

Sir: In addition to having the typical signs of idiopathic hypoparathyroidism, the patient described here showed features of hypocalcaemic myopathy, rarely reported previously in this condition.1-6

A 65 year old woman was admitted to hospital with complaints of intermittent carpopedal spasm (tetany) and easy fatigability. She had noted carpopedal spasm 20 years before. Five years before admission, she had had operations for bilateral cata-

raets. For the past year, she had had three drowsy attacks associated with vomiting and cold sweating, each of which lasted for 5 to 10 minutes. There was no past history or family history of neuromuscular disease.

On physical examination, the patient was normal in stature and appearance. She had varicose veins and ecchymoses on both legs. The skin was dry and not infected. Neu-

rological examination revealed hoarseness, mild dysphagia and moderate weakness pre-
molently affecting the proximal limb muscles. Muscle stretch reflexes were diminished with hypotonicity. There was no sensory disturbance or incoordination. The WAIS score revealed a verbal IQ of 86. A typical carpal spasm appeared 30 seconds after a blood pressure cuff was inflated. The Chvostek sign was present on both sides.

On laboratory findings, serum calcium was low (5.0 mg/dl) and phosphorous 7.0 mg/dl. Unfortunately serum myoglobin level was not measured. The parathyroid hormone (PTH) concentration, 0-18 ng-

E/ml, was less than normal. Reaction to exogenous PTH (Ellsworth-Howard test) was positive. Serum vitamin D₃ level was 12 ng/ml (normal 14-42). The level of serum creatine kinase (CK) was high (756 IU/l, normal < 110) with mild elevation of lactate dehydrogenase and aldolase activity. The MB isozyme of CK was 5% and MM 95%. Electrocardiography showed a prolonged QTc of 0.58 second. Echocardiographic examination revealed cardiomyopathy and a pericardial effusion of 350 ml. Cranial computed tomography revealed bilateral symmetrical calcification of the basal gan-

glia and the dentate nuclei. Electroen-

cephalography showed slowing of background activity without localising fea-
tures. An electromyographic finding was an increase in polyphasic long-duration poten-
tials in the distal part of the leg, but was normal in the proximal muscles. Motor nerve conduction velocities were normal.

The muscle biopsy specimen was taken from the quadriceps femoris muscle. Light-

microscopical examination revealed variety in fibre size without fibre necrosis, vacuole or inflammatory cell infiltration. Routine ATPase reaction showed type 2 fibre atro-

phy (fig a). Electron microscopical exami-

nation showed perinuclear accumulation of mitochondria and focal myofibrillar degenera-
tion. A few muscle fibres had concentric laminated bodies. In addition to these exam-

inations, immunohistochemical localisation of myoglobin was studied. The formalin-

fixed paraaffin-embedded 3-μm-thick sections were stained using anti-myoglobin rabbit serum (1:200, DAKO, Denmark) by PAP method of Sternberger.7 In our patient, negative immunoreaction for myoglobin was observed in some muscle fibres, many of which correspond to atrophic type 2 fibres; positive reaction, on the contrary, was observed in the remaining fibres (fig b). In control patients with amyotrophic lateral sclerosis, almost all fibres, including atrophic type 2 fibres, were immunostained for myoglobin, though the intensity was varied. Normal muscle fibres of necropsied patients without neuromuscular diseases were also immunostained.

After administration of calcium and 1α-hydroxyvitamin D₃, serum level of cal-

cium and CK returned to normal values. Tetany, muscle weakness, easy fatigability, pericardial effusion and other symptoms and signs disappeared within 4 weeks.

The calcium ion plays many important roles in neuromuscular function. In hypo-

calcemic patients, increased excitability of neuromuscular junction results in the well-

known manifestation of tetany, mainly affecting the distal muscles. However, several authors1-6 have noted other mani-

festations: proximal muscle weakness, easy fatigability and elevated muscle-associated enzymes, and designated them as hypo-

calcemic myopathy related to direct effect of hypocalcaemia on muscle fibres. Frame,8 however, pointed out that the elevated serum enzyme levels could be related to the tetany. In our patient, tetany appeared only two or three times a day, lasting for a few seconds, and serum CK activity did not fluctuate after the tetany of three minutes' duration was induced by forearm ischaemia, suggesting that the tetany could be minimally related to the high CK activity.

Fig. Quadriceps femoris. (a) Routine ATPase stain, demonstrating type 2 fibre atrophy (cryostat section, × 150). (b) Immunostaining for myoglobin, demonstrating negative staining of atrophic fibres (paraffin section, × 300).
Transient global amnesia and migraine in twin sisters.

M J Dupuis, P Pierre and R E Gonsette

*J Neurol Neurosurg Psychiatry* 1987 50: 816-817
doi: 10.1136/jnnp.50.6.816