performed rapid serial subtraction. Registration of a name and address was normal, but he was unable to name the prime minister or monarch, and said to the examiner "what's a monarch?" There was no evidence of repetitive questioning and the patient gave an accurate history of the events over the past few hours. Physical examination was normal.

The next day, he was reviewed in the Neurology Department. Again orientation and verbal anterograde memory were normal. Digit span was recorded as six forwards and four backwards. His spontaneous language was normal and he was able to name 12 everyday common objects. Category fluency for animal names was, however, reduced in that he produced only eight such exemplars. Brain CT and EEG were normal and he was discharged from hospital.

When I reviewed the patient one month later he was able to give a lucid account of the events surrounding his admission to hospital and remembered being unable to name and identify vegetables and other things shown to him by his family. He also recalled accurately the sequence of events relating to his hospital admission. Cognitive assessment showed him to now be normal. His verbal fluency for animal names had risen from the previously impaired level to 18. More formal neuropsychological assessment disclosed a level of verbal intellectual and memory performance commensurate with his predicted background education and IQ assessed by reading age.

The features of the attack suggest a transient loss of semantic memory with preservation of anterograde episodic and working memory, a syndrome which has hitherto been unrecognised.

The syndrome of progressive, yet selective, loss of semantic memory was first recognised by Warrington.¹⁵ More recently, the term semantic dementia has been applied to this syndrome, the core features of which are as follows: (1) selective loss of semantic memory causing severe anomia, decreased word comprehension, impaired production of exemplars on tests of word fluency, and a loss of general knowledge, (2) sparing of other aspects of language, notably syntax and phonology, (3) unimpaired perceptual and non-verbal problem solving abilities, and (4) preserved anterograde episodic memory.¹⁶⁻¹⁸ Neuroimaging studies in semantic dementia have consistently shown atrophy of the temporal lobe involving particularly the left inferolateral neocortex with sparing of the hippocampal formation.^{17,18} Parallel functional activation studies, using PET, have also pointed to a key role for the inferolateral left temporal lobe in semantic memory.¹⁹

It can be seen from this brief description of semantic dementia that the syndrome described in the present paper seems to be a transient analogue of selective semantic memory loss. In the same way that transient global amnesia is a temporary form of the classic amnesic syndrome resulting from reversible dysfunction of structures critical for episodic memory, transient semantic amnesia is likely to result from a temporary dysfunction of the inferolateral temporal lobes. Of course, this remains a speculative hypothesis as functional imaging studies (SPECT or PET) were not obtained during, or after, the present patients' attack.

It is of interest that our patient was a lifelong migraineur and that the attack occurred in the context of a particularly severe episode of migraine. As mentioned in

the introduction, there is now an established association between transient global amnesia and migraine. A wide range of physical and emotional stressors have been linked to transient global amnesia and a unifying hypothesis was proposed by Olesen and Jorgensen.²⁰ They suggested that the phenomenon of spreading depression could be precipitated by intense volleys of sensory inputs to the hippocampus, releasing the neurotransmitter glutamate; glutamate is a potent cause of spreading depression in animals. It was subsequently suggested that this may, therefore, provide a link between the diverse precipitating factors reported to provoke transient global amnesia. These stressful stimuli may act by causing a surge of excitotoxic neurotransmitter which then temporarily shuts down normal memory function in the hippocampus.³ A similar mechanism could be evoked as the cause of transient semantic amnesia, although the neurotransmitter systems involved in the lateral temporal neocortex are less clearly established.

It is possible that transient semantic amnesia may be more common than has been recognised. In transient global amnesia, the profound loss of anterograde episodic memory results in repetitive questioning and a loss of all new information after a few seconds. Such an attack will not escape the notice of observers and will lead to medical attention. Impairment of semantic memory results in more subtle cognitive dysfunction without the dense lacuna seen in transient global amnesia, as illustrated here.

In conclusion, the present report describes a patient with what seems to be temporary reversible impairment of semantic memory with preservation of anterograde memory function.

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Alopecia with carbamazepine in two patients with focal seizures

In the treatment of patients with epilepsy with antiepileptic drugs, alopecia was reported in association with valproic acid (VPA),¹ and on rare occasions with carbamazepine (CBZ).^{2,3} We recently encountered two young women with partial seizures who developed alopecia after starting CBZ.

Patient 1 was a 32 year old woman with a diagnosis of left frontal lobe epilepsy since the age of 27. Her habitual seizures were simple partial seizures consisting of tonic contraction of her right hand and bilateral orbicularis oculi muscles, followed by eye deviation to the right and clonic convulsion of the right side of her face, which were not usually associated with disturbance of consciousness. A cranial MRI was normal and routine EEG showed normal background activity and intermittent irregular 2-3 Hz slow activity at the left frontotemporal area seen every 50 to 100 seconds. As the seizures had started occurring often, the patient had been started on VPA (1200 mg/day) and diazepam (6 mg/day). Because alopecia developed over a period of several months, these two drugs were discontinued, and then the hair loss stopped. As her seizures became less frequent despite discontinuing VPA and diazepam, no medication had been taken in the next year until she visited our hospital, at which time the seizures had started occurring once every month or every other month. The patient was then given CBZ, increased the dose gradually up to 300 mg/day in two months, and the steady state trough blood concentration was 5.0 mg/l. Three months after starting CBZ, the patient developed appreciable hair loss, as seen previously with VPA. After CBZ was switched to phenobarbital, hair shedding stopped. The patient had no pregnancy, other dermatological problems, endocrine disorders, or autoimmune disturbance such as systemic lupus erythematosus throughout the clinical course.

Patient 2 was a 25 year old woman with a diagnosis of tuberous sclerosis associated with complex partial seizures since the age of 17. She had several small Pringle adenomas on her face and a depigmented macule on her trunk, but otherwise no skin lesions, includ-

ing in her hair, were seen. Her intellectual function was within the normal range, and her social activity was normal. Multiple angiomyolipomas in both kidneys, plaques in the retina, and a small calcified tuber by the left lateral ventricle were found. Her habitual seizures consisted of loss of awareness, incoherent speech, staring, and right hand dystonic posture. Routine EEG showed normal background activity. Prolonged EEG monitoring recorded ictal rhythmic discharges mainly at the right posterior quadrant. The patient had been on VPA (200 mg/day) and phenobarbitone (80 mg/day) for more than six months, with steady state trough blood concentrations of 66.6 mg/l and 20.2 mg/l respectively. VPA was switched to CBZ to achieve better seizure control, that was increased up to 600 mg/day in one month. Two months afterwards, when the blood concentration of CBZ was 6.5 mg/l, the patient had appreciable hair loss, and especially over the front of her head her hair became very sparse. When the dose of CBZ was reduced to 200 mg/l in two weeks, moulting stopped, and new hair began to grow. No other skin lesions developed simultaneously, and no white tuft hair was seen. Throughout the clinical course, the patient had no pregnancy, endocrine disorders, or autoimmune disturbance. CBZ had been given in a different hospital one year before the present episode, but at that time the patient took the drug only for a week, because it caused dizziness and ataxia.

CBZ often causes allergic reactions such as skin rash, and also systemic lupus erythematosus, both of which can potentially cause hair loss.⁴ Pregnancy, fever, thyroid dysfunction, and malnutrition are also potential causes of hair loss.⁵ In the present two patients, there were no such accompanying causes to explain their hair loss. In the previous case report of hair loss associated with CBZ, it occurred a week after CBZ was initiated.³ Human hair follicles have two phases: an anagen (growth) phase of four years, and then a telogen (resting) phase of three months, followed by normal hair loss.⁵ Therefore, the onset of the hair loss within a week of CBZ administration was interpreted as a disturbance of growing of hair follicles (anagen phase).² However, in the present report, it took two and three months in patients 1 and 2 respectively, until hair loss started. This can be explained by the premature ending of the anagen phase, as usually seen in treatment with antithyroid drugs, anticoagulants, and VPA.⁵ This type of hair loss occurs about three months after the insults—namely, at the end of the telogen phase,⁵ as seen in the present cases. This may explain why in patient 2 hair loss was not recognised when she had taken CBZ for a week previously. Both of the present patients had been on VPA previously, and patient 1 had hair loss most likely caused by VPA. This did not happen in patient 2. Thus it suggests that hair loss caused by CBZ and VPA does not necessarily occur by a common mechanism. The common characteristics in these two patients are that both were young women with partial seizures, which were treated by polytherapy with anticonvulsant drugs. A recent double blind, multi-institution trial to compare CBZ and VPA showed that changes in hair texture or hair loss were seen in 6% of the patients treated by CBZ.⁷ As the authors did not specifically differentiate between changes in hair texture and hair loss, it is uncertain how often hair loss occurred in

association with CBZ, and what the patient population with this side effect was. Although alopecia resulting from treatment with CBZ is not often seen, attention must be given to epileptic patients, especially when precipitating factors of hair loss are present, and also especially in young women.

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Neurological manifestations of coeliac disease

The association between progressive myoclonic encephalopathy (Ramsay Hunt syndrome; progressive myoclonic ataxia) was recently the subject of a clinicopathological report in this *Journal*¹ and of a review by Bhatia *et al.*² A notable feature of these cases was the rapidly progressive nature of the encephalopathy. Most patients were unable to walk or died within two years of the onset of their neurological symptoms. The patient that we report is therefore remarkable in that her neurological illness began 13 years ago. Progressive myoclonic encephalopathy associated with coeliac disease may take a more benign course and we suggest that the condition should be considered in all patients with cerebellar ataxia, particularly if there is myoclonus.

The patient, now aged 64, presented at the age of 55 with a four year history of difficulty with fine finger movements in both hands, worse on the right such that she had difficulty picking up coins and doing up buttons. Her walking had also become slower. Examination at the age of 55 disclosed a jerky upper limb tremor with myoclonus but no gait ataxia. The tremor and myoclonus have slowly worsened and she has developed an ataxic gait. She now walks with a frame indoors, but has frequent falls. She uses a wheelchair outdoors. She has never had a seizure.

She has never had any specific bowel symptoms, but investigation of a macrocytic anaemia and folate deficiency associated with weight loss eventually led to the diagnosis of coeliac disease five years ago, confirmed by small bowel biopsy. However, coeliac disease was almost certainly present 10 years before

this when she was investigated for anaemia at another hospital and an abdominal ultrasound disclosed hyposplenism. Reticulin antibodies were present. She was started on a gluten free diet and the haematological indices returned to normal. Vitamin E concentrations were normal. Her other medical history included pulmonary tuberculosis at the age of 22.

On examination she had spontaneous, and reflex and action myoclonus in the upper limbs and, to a lesser extent, in the leg. In addition, there was a postural upper limb tremor and finger-nose ataxia bilaterally. Her gait was ataxic and she walked with a frame. Tendon reflexes were normal and plantar responses flexor. Vibration sensation was absent below the knees, but proprioception in the big toes was normal. Neurophysiological studies confirmed multifocal spontaneous, reflex and action myoclonus particularly of the hands. Back averaging from the action jerks disclosed time locked cortical activity over the contralateral hemisphere, preceding each jerk by 27 ms. Somatosensory evoked potentials after finger stretch were pathologically enlarged.

The clinical and neurophysiological characteristics of her condition conform closely to those previously reported in patients with coeliac disease and the Ramsay Hunt syndrome, except that the rate of progression of her disease has been much slower. Of 11 cases reported in the literature,¹⁻³ seven have been unable to walk or stand or have died within two years of the onset of their neurological illness. The longest reported survival after the onset of neurological symptoms has been six years (case 1 of Lu *et al.*) at which time the patient was unable to walk. Our patient has now had neurological symptoms for more than 13 years and remains ambulant, albeit with a frame.

The present case shows that myoclonic encephalopathy associated with coeliac disease does not invariably have a rapidly progressive course. This case and the recent report of anti-gladin antibodies in 17 out of 25 patients with ataxia of unknown cause (of whom four subsequently had abnormal small bowel biopsies consistent with coeliac disease⁴) suggests that coeliac disease should be considered in all patients with ataxia, particularly if there is myoclonus.

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