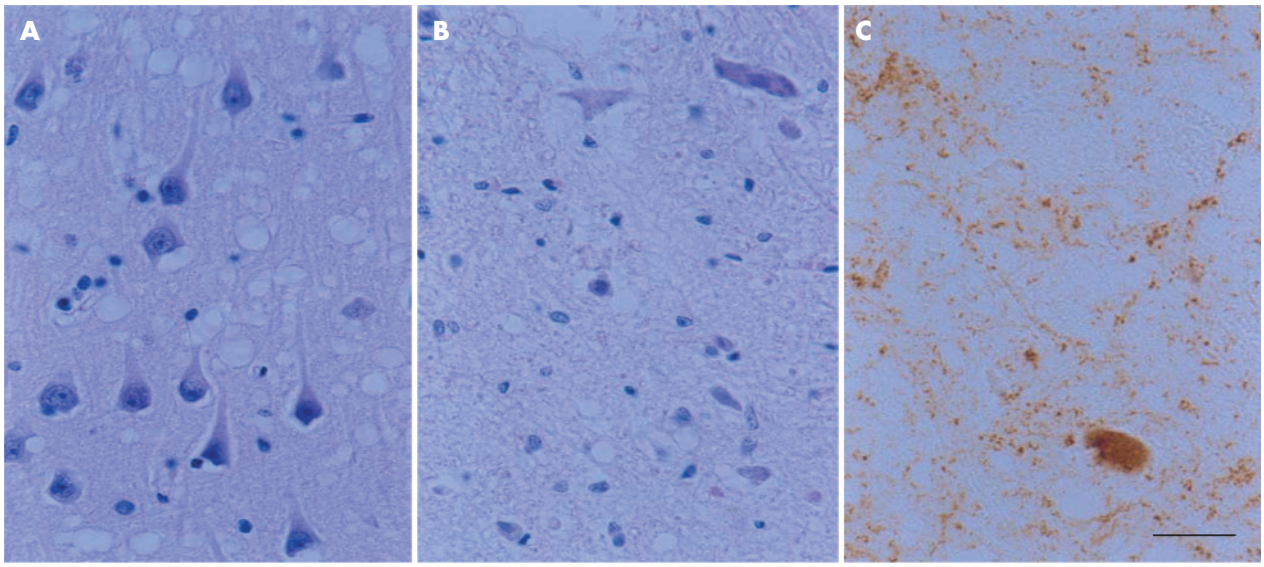

Figure 1 (A) Frontal cortex with moderate neurone loss, neuronal vacuoles and spongiform change. (B) Ventral cochlear nucleus showing the almost absence of large neurones. (C) Punctate PrPres immunostaining in the lateral vestibular nucleus. Paraffin sections (A,B) Haematoxylin and eosin staining; c:PrP^{RES} immunohistochemistry. Scale bar = 25 μm.

Only two cases of CJD with deafness at onset have been published: one sporadic, associated with symptoms suggestive of polyneuropathy,[2] and the other familial, with the E200K mutation and typical features.[3] Other cases have been reported as presenting with auditory agnosia or with cortical deafness, and early involvement of the acoustic pathway was already detected through demonstration of progressive BAEP deterioration in patients with CJD who did not present deafness in the course of the disease.

The first case was that of a 71-year-old woman who presented with a sudden change in hearing and aural fullness, and a vague feeling of imbalance.[2] Hearing loss and gait instability worsened rapidly Audiometry showed bilateral neurosensorial hearing loss, and BAEPs were initially normal. She later developed signs of polyneuropathy and mental deterioration, left homonynous hemianopsia and decreased vibratory and pinprick sensation. The second case was that of a 46-year-old Italian woman with the E200K mutation, who had rapidly worsening hearing loss.[3] Three weeks later she developed an unstable gait, and her condition rapidly progressed to bilateral deafness, ataxia, myoclonus, pyramidal and extrapyramidal dysfunction, and mental deterioration. She died 6 months after the onset of the disease. Magnetic resonance imaging scans showed high signal areas, mostly in the caudate and putamen, EEGs showed periodic sharp-wave complexes, and protein 14-3-3 was present in the cerebrospinal fluid. Audiometric investigation showed bilateral sensorineural hearing loss, and BAEP abnormalities from the beginning seemed to confirm early brain stem involvement. The course of the illness, clinical features and EEG recordings were similar to those of the sporadic form of CJD.

Accumulation of PrP in the brain stem has been found to be an early pathological event in sporadic CJD, but these deposits are not necessarily associated with clinical symptoms or neuronal loss, and the brain stem seems to remain relatively resistant to the pathological process of sporadic CJD.[4] Neuropathological changes in brain stem structures have been described in sporadic and familial CJD, associated with atypical onset, with gaze disorders and with fatal familial insomnia. Unfortunately, necropsy was not possible in the two patients with early deafness, and to our knowledge specific involvement of cochlear and vestibular nuclei has not been reported previously

Western blot of PrP showed a type 1 pattern in our case. This is the pattern usually observed in sporadic CJD M/M homozygotic at codon 129, and it has also been described in patients with the E200K mutation associated with the allele 129M in the mutated chromosome.[5] It is not known whether the glycation pattern of abnormal PrP has an influence on phenotype. In our patient also, who was M/V homozygotic, the codon 129 status of the mutated allele was not investigated.

This case illustrates the phenotypic variability of presentation of CJD, and describes the specific involvement of brain stem auditive nuclei in a patient with hypoacusis as the initial manifestation, thereby reflecting early brain stem involvement.

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Fugue associated with migraine

Case history

A 33-year-old man was brought by ambulance to the emergency department from a local park with a right-sided headache and amnesia. He did not know his name, age, address, occupation or marital status. He could not remember how he came to be in the park, nor could he recall any autobiographical event before that morning. Despite this alarming deficit, he responded to all questions directly, showing surprisingly little distress at his predicament. Cognitive testing showed that he was orientated to time and place, and able to perform well on tests of attention, concentration and recall. He was afebrile, and his physical examination was unremarkable. We observed no signs of head trauma or substance intoxication or withdrawal. His blood alcohol

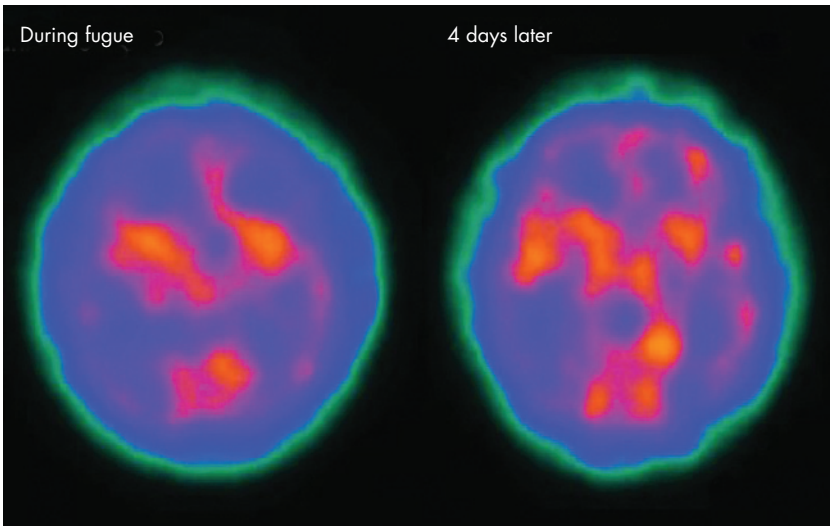

Figure 1 A single-photon emission computed tomography scan showing moderate hypoperfusion of the right temporal and parietal lobes during fugue with a follow-up scan 4 days later.

concentration was 0 and a urinary drug screen was unremarkable. A white cell count showed mild neutrophilia, but all other haematological and biochemical indices were normal. Cerebral computed tomography and lumbar puncture were normal. He started receiving empirical intravenous antibiotic and antiviral treatment and was admitted for observation.

The next morning, the patient's headache continued and he remained profoundly amnesic. However, he was able to write down a motorcycle license-plate number which was used by police to identify him. Further history then available from family members and the patient's regular neurologist showed a 20-year history of migraine with aura consisting of blurred vision and scintillation spectra, often followed by unilateral paraesthesias of one hand culminating in frontal headache contralateral to the hand.[1] The patient had experienced numerous prior episodes of amnesia often involving travel within the city and on one occasion several hundred kilometres between cities. Each episode invariably occurred in the context of a migraine, with the fugue state occurring after the onset of headache but not preceding it. The patient had also experienced migraines with shorter periods of amnesia lasting minutes, in which he forgot what he was doing but did not result in travel. On presentation, there were no historical features to indicate a primary psychiatric disorder and nothing to suggest the patient might be malingering. There were no recent psychosocial stressors. Cerebral magnetic resonance imaging (MRI) performed 3 months earlier had shown foci of increased signal in the subcortical white matter, consistent with white matter hyperintensities described in previous imaging studies of migraineurs.[2] We found no space occupying lesions or other structural abnormalities.

Migrainous fugue was diagnosed, and the patient was given 50 mg of sumatriptan. Within 3 h his headache improved, his autobiographical data returned, and he was suddenly able to give a comprehensive and lucid personal history confirming historical details already sourced from his family and doctors. The role of a single unblinded dose of sumatriptan in his recovery should be interpreted with caution, as the patient subsequently reported that he had tried numerous drugs for his migraines (including sumatriptan) without success. An electroencephalogram (EEG) performed 3 h after the return of the patient's memory was normal. A SPECT scan also performed at this time showed moderate hypoperfusion of the right temporal and parietal lobes and mild frontal hypoperfusion compared with a follow-up scan at 4 days (fig 1).

Discussion

Fugue states are characterised by a complete loss of memory for all personal details and are often associated with travel from home. Although often witnessed on stage and screen, real-life fugue states are rare. The classical psychogenic dissociative fugue is said to be an unconscious reaction to a traumatic event where the person ''forgets'' in an effort to cope with the anxiety the event evoked.[3] However, a range of organic causes have been reported, including complex partial seizures, drugs and head trauma.[3] Changes in cerebral perfusion during migraine have been described in the literature.[4] We hypothesise that our patient's recurrent fugue states are causally related to migrainous hypoperfusion of the temporal and frontal lobes, and the limbic region, in keeping with the SPECT findings. Markowitsch *et al* investigated a case of autobiographical amnesia and found similar perfusion changes on positron emission tomography scanning.[5] However, to the best of our knowledge, there have been no previous case reports of fugue in the context of migraine with aura, with changes in cerebral perfusion documented by SPECT scanning.

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Severe chorea with positive anti-basal ganglia antibodies after herpesencephalitis

Chorea has been described as an initial sign of relapse in children with herpes simplex virus encephalitis. We describe the detection of anti-basal ganglia antibodies (ABGA) in plasma and cerebrospinal fluid (CSF) of a 2.3-year-old girl with severe chorea 3 weeks after acute herpes simplex virus (HSV) encephalitis. Although common neuroleptic and antidopaminergic drugs were ineffective, plasmapheresis combined with immunosuppression was followed by rapid and complete neurological recovery. These findings suggest a post-infectious, immune-mediated mechanism in this case of chorea after HSV encephalitis.

HSV encephalitis accounts for 10–20% of all viral encephalitis in the US.[1] Occasionally, chorea has been described as an initial sign of relapse with often poor prognosis. At least three pathogenic mechanisms are possible: occurence of late-onset symptoms of the initial viral infection, recurrence of viral replication (owing to incomplete treatment of the initial HSV encephalitis or by selection of clones of aciclovir-resistant virus), or induction of a deleterious immunoinflammatory reaction.[2] Autoimmune-mediated brain disorders are well known after group A β haemolytic streptococcal infections: for example, Sydenham's chorea or paediatric autoimmune neuropsychiatric disorders associated with streptococcal infections (PANDAS). Here, we