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Case Report

Focal retrograde amnesia: Extending the clinical syndrome of transient epileptic amnesia

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ABSTRACT

A 44-year-old woman presented with focal retrograde amnesia and complaints of rapid forgetting in the absence of episodes of transient cognitive disturbance. Her MRI and 2-deoxy-2-[18F]fluoro-D-glucose positron emission tomography (FDG-PET) were normal. On standard neuropsychological tests she performed within the normal range although a test of autobiographical memory confirmed impoverished recall especially involving recent life events. The electroencephalograph (EEG) recordings were suggestive of temporal lobe epilepsy but no clear diagnosis was established. After 4 years the patient's recurrent brief episodes of disorientation, suggestive of transient epileptic amnesia (TEA), were corroborated by her sister. This diagnosis was confirmed by an ambulatory EEG that revealed ictal activity.

Several important points emerge from this study. Focal retrograde amnesia can be a prodromal symptom of TEA which can precede the full-blown syndrome by several years. Moreover, transient attacks might not be reported if patients live alone. The ictal EEG findings further substantiate the epileptic nature of the syndrome.

1. Introduction

Transient epileptic amnesia (TEA)[1–3] is characterized by recurrent brief amnesic periods often on waking presenting in middle-aged or elderly subjects. Patients complain of dense gaps in autobiographical memories[4] and accelerated loss of new memories over days or weeks,[5] although their performance on standard neuropsychological tests is within normal limits.[6]

The question arises of whether some patients with isolated retrograde amnesia (RGA) may have a cryptic form of TEA as electroencephalograph (EEG) findings may be subtle.[7] We report a long-term study of a patient presenting with focal RGA and accelerated forgetting but without other clinical manifestations of TEA. Definite proof of the diagnosis emerged only 4 years later when transient "attacks" were witnessed and ambulatory EEG revealed accompanying ictal activity.

2. Case report

A 44-year-old woman presented in 2004 with a 12 months history of focal RGA. She noticed that friends and family could recall events that she could not, even when prompted. She and family members denied transient amnesia or ictal phenomena and no changes in cognition, mood, appetite or sleep. The patient did not smoke, drank no alcohol and had no history of psychiatric illnesses.

Her medical history included hypertension, a thyroidectomy and mild infrequent migraine without aura. Awake and sleep EEGs showed sharp waves in the left temporal region but seizures and epileptiform changes were not seen on an ambulatory EEG recorded over 4 consecutive days. Her MRI and 2-deoxy-2-[18F]fluoro-D-glucose positron emission tomography (FDG-PET) were normal.

Neuropsychological assessment revealed average to high average level on all measures (premorbid intellect, visuo-spatial, language, executive function and memory measures (Table 1)). Long-term memory testing indicated accelerated forgetting over seven days and impaired recent autobiographical memories (Fig. 1).

A diagnosis of TEA was suspected, despite the absence of clinical manifestation of epileptic activity. Anticonvulsants were tried but were either not tolerated (lamotrigine) or found to be ineffective (levetiracetam, carbamazepine) in preventing ongoing memory complaints.

In 2008 she attended for follow-up with her sister, who reported recurrent episodes of less than a minute, in which the patient appeared muddled and complained of "drifting away",

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Table 1
Selected neuropsychological scores for a patient with transient epileptic amnesia and normative data

Tests (max. score)	*2004*	*2008*	Normal mean (SD)
NART			
Estimated FSIQ	115	–	100 (15)
ACE-R			
Memory (26)	–	23	23.4 (2.7)
Total (100)	–	92	93.7 (4.3)
MMSE (30)	–	30	29 (1.7)
Logical memory – WMS-III			
Immediate recall (ASS)	11	12	10 (3)
Delayed recall (30 min) (ASS)	11	14	10 (3)
RCFT (36)			
Copy	34	36	33.5 (3.8)
Delayed recall (30 min)	15	18	19.7 (5.1)
Doors and People			
Doors (ASS)	9	7	10 (3)
RAVLT (15)			
Immediate recall	15	13	12.4 (1.6)
Delayed recall (30 min)	13	12	10.6 (2.5)
Recognition	14	14	13 (2.2)

Normative data are taken from test manuals and reference literature.
ACE-R = Addenbrooke's Cognitive Examination – Revised, ASS = Aged Scaled Score, FSIQ = full scale intelligence quotient, MMSE = Mini-mental state examination, min = minute, NART = National adult reading test, RAVLT = Rey auditory verbal learning test, RCFT = Rey complex figure test, WMS = Wechsler memory scale.

sometimes with disorientation and recurrent questioning but without other ictal phenomena. It is not clear when these attacks started as the patient lives alone. This corroborated report of transient attacks raised again the suspicion of TEA.

A continuous ambulatory EEG recording using the 10–20 system for electrode placement using the Siesta Compumedics System (Abbotsford, Vic., Australia) for 96 hours. Frequent interictal epileptic sharp waves were seen in the right anterior temporal region (Fig. 2a). The patient reported an episode of feeling 'vague' which coincided with a 20s seizure arising from the left anterior temporal region (Fig. 2b). Following commencement of topiramate (1000 mg) no further episodes of transient amnesia have been reported by the patient or family, although she continues to complain of poor memory.

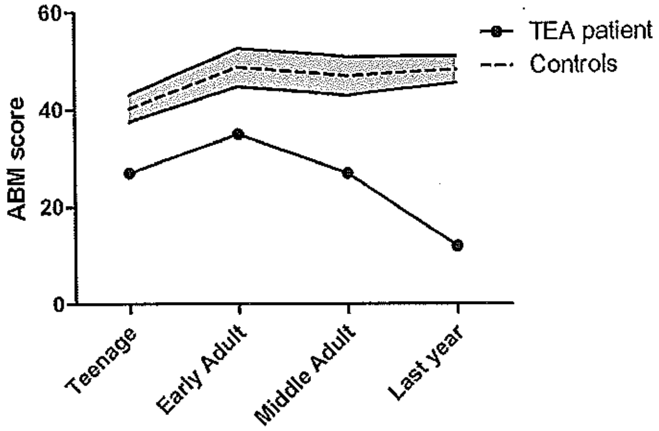

Fig. 1. Patient's autobiographical memory (ABM) event recall over four time periods (teenage: 11–18 years; early adult: 18–30 years; middle adult: 30–40 years; last year) compared to healthy controls (dotted line = control mean; grey shaded area = standard error of the mean [SEM]).

T1-weighted (turbo field echo) and T2-weighted (fluid-attenuated inversion recovery) scans were again normal.

A re-investigation of her memory replicated previous findings (Table 1), showing intact performance on standard verbal and non-verbal anterograde memory tests. Her autobiographical memory[8] was again explored and showed a degradation of memories across all life periods in comparison to controls, but in particular for the last year.

3. Discussion

To our knowledge this is the first report of a patient with focal retrograde amnesia as a prodromal feature of TEA.

At presentation the patient did not meet diagnostic criteria of TEA.[7] Her dense gaps in autobiographical memory raised the suspicion of TEA but occurred without definite epileptic features. After 4 years the diagnosis of TEA was confirmed, by the onset of transient attacks corroborated by a witness and ictal epileptic EEG activity.

These findings raise the question of what diagnosis should be given to patients not meeting TEA criteria, and whether patients

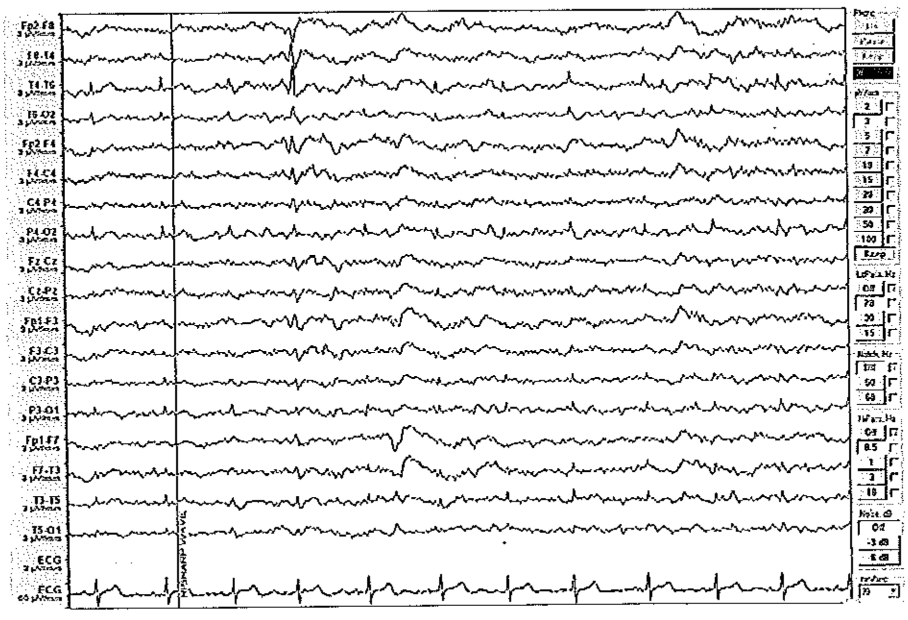

Fig. 2a. The patient's interictal electroencephalogram recording, using the 10–20 system for electrode placement.

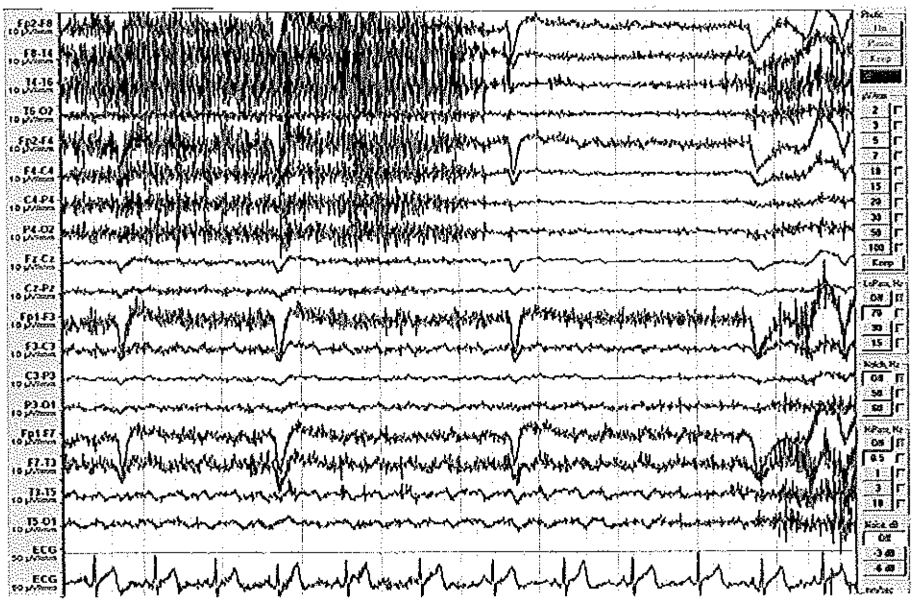

Fig. 2b. The patient's ictal electroencephalogram recording, using the 10–20 system for electrode placement.

with psychogenic amnesia might have a form of TEA. Complaints of isolated autobiographical memory loss present the clinician with a challenge because there are few standardized remote memory tests. The pattern in our patient was suggestive of organic brain disease with a temporal gradient indicating that recent memories were more affected than distant ones and this pattern was stable over time.[8] Patients with TEA show pronounced deficits in autobiographical memory and accelerated forgetting, but normal performance on memory tests employing short retrieval delays.[7] The cause of the autobiographical memory loss and accelerated forgetting in TEA is unclear.[7]

In many patients with TEA the evidence in favor of epilepsy is circumstantial and based on EEG abnormalities or a response to anticonvulsant medication. Ictal, EEG recordings have been very rare in TEA patients.[7] Our results support assumptions about the aetiology of the syndrome by showing ictal EEG abnormalities.

In conclusion, TEA can present as focal retrograde memory loss. A detailed enquiry into any events that could suggest ictal activity should include an interview of family members as attacks might not be recalled by the patient. Assessment of autobiographical memory and long-term forgetting are invaluable investigations together with ambulatory EEG recording.

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