



Case Report

Transient global amnesia mimics: Transient epileptic amnesia



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ABSTRACT

We describe the case of a 79-year-old patient referred for suspected transient global amnesia, after an episode of anterograde amnesia which lasted 90 min. An EEG, performed after the episode, showed bilateral temporal electrographic seizures, orienting the diagnosis toward a transient epileptic amnesia. Transient epileptic amnesia is defined by temporal lobe epilepsy characterized by recurrent transient amnesic episodes of 30–90 min in duration, sometimes associated with olfactory hallucinations or oral automatisms. Response to antiepileptic drugs is excellent. We would like to raise awareness toward this epileptic amnesia when facing atypical or recurrent transient amnesic episodes.

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1. Introduction

Transient global amnesia (TGA) is a frequent disorder defined by a sudden onset of retrograde and anterograde amnesia lasting less than 24 h, with episodes typically lasting between 2 and 12 h [1]. Its pathophysiology remains unclear, and several mechanisms have been postulated, such as focal ischemia, epileptic phenomenon, and, more recently, venous congestion. Its onset is most commonly after 50 years of age, and the episodes are usually unique with a mean annual recurrence rate of 4–5%. Differential diagnosis includes posterior cerebral artery transient ischemic attack, transient epileptic amnesia (TEA), hypoglycemia, and dissociative fugue.

We describe a case of TGA mimics with a brief amnesia (90 min) and EEG findings.

2. Material and methods

A 79-year-old patient was referred to the emergency room for suspected TGA. His wife noticed that the patient suffered from anterograde amnesia as he was taking his breakfast. He kept repeating the same sentences (“Where am I? What’s happening?”) and seemed lost with regard to time and place. The witness did not notice oral automatisms or altered consciousness. The episode lasted about 90 min, and when we examined the patient, he had recovered. Forward digit span was 6. Three words immediate recall was 3/3, and delayed recall was 3/3 with a category cue. Autobiographical memory was excellent except

for the acute episode. Brain MRI was normal. A standard EEG performed 3 h after the episode showed a right temporal electrographic seizure with a recruiting pattern of about 25-second duration, immediately followed by a left temporal electrographic seizure of shorter duration (about 15 s) (Fig. 1); the patient was not tested by the technician, but there were no obvious clinical symptoms. The patient was treated with levetiracetam (500 mg twice daily) and has not presented any further episode of amnesia (2-month follow-up).

3. Results

Our patient was considered to have suffered from a transient global amnesia, before we obtained the results of the EEG. However, he had some atypical features which included an age older than the usual mean and a shorter duration of the episode (90 min) than the classical mean duration of several hours (between 2 and 12). The EEG showed short electrographic temporal lobe seizures, which allowed a diagnosis of transient epileptic amnesia.

4. Discussion

Transient epileptic amnesia (TEA) is defined as a temporal lobe epilepsy characterized by recurrent transient memory loss, lasting usually less than 1 h, frequently on waking and often accompanied with other temporal features such as olfactory hallucinations and oral automatisms [2–5]. Response to antiepileptic drugs (AEDs) is often favorable. Up to now, the reported EEG findings were mostly interictal and include uni- or bilateral temporal sharp waves (1/3 of cases), nonspecific focal slow waves (1/3), or normal EEG [5]. We found only one report of an ictal EEG [6], showing diffuse fast low-amplitude activity in the temporal region, then recruiting rhythm spreading from one side to the other.

Abbreviations: TGA, transient global amnesia; TEA, transient epileptic amnesia; EEG, electroencephalogram; AEDs, antiepileptic drugs.

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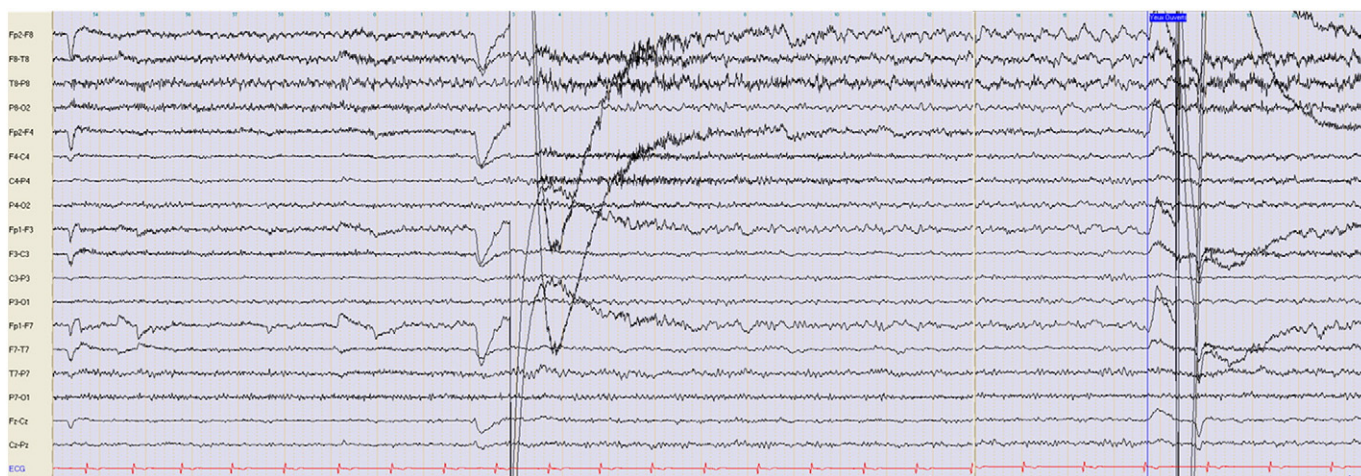


Fig. 1. Ictal EEG performed 3 h after the end of the episode. Right temporal lobe electrographic of 25- to 30-second duration. On this longitudinal bipolar montage (*double banana*), the standard 20-minute duration EEG shows a right temporal electrographic seizure with a recruiting pattern affecting the whole right temporal region. This electrographic seizure was immediately followed by a left temporal electrographic seizure of shorter duration (about 15 s) (data not shown). There were no obvious clinical symptoms, but the patient was not tested during these ictal electrical patterns.

Imaging studies in TEA are usually unremarkable [5], but recent studies with automated and manual magnetic resonance volumetry revealed bilateral medial temporal lobe atrophy, mostly restricted to the hippocampus [6]. Moreover, the hippocampal atrophy was correlated with accelerated long-term forgetting, whereas information initially learned and recalled correctly is forgotten at an accelerated rate over the following days and weeks [5,7].

We performed a search of the medical literature of all case reports and series of transient amnesia with epileptic features until December 2013 using PubMed [7–16]. The work of Butler and Zeman [5] has been of particular importance, as it collected 93 cases prior to November 2007, 54 of which met their diagnostic criteria. Their criteria are as follows: (1) a history of recurrent witnessed episodes of transient amnesia, (2) cognitive functions other than memory judged to be intact during typical episodes by a reliable witness, and (3) evidence for a diagnosis of epilepsy based on one or more of the following: (a) epileptiform abnormalities on electroencephalography, (b) the concurrent onset of other clinical features of epilepsy (e.g., lip-smacking, olfactory hallucinations), and (c) a clear-cut response to anticonvulsant therapy.

We found 11 more cases meeting these diagnostic criteria, which totals 105 cases of TEA.

Our review of patients with transient epileptic amnesia confirms a clear predominance of males (63%), with a mean age of 58.8 (range: 11–82). The median duration of amnesic episodes in the literature is 30–60 min, but episodes of a few seconds and of more than 24 h have been described [5]. Temporal lobe epilepsy features other than amnesia, such as automatisms and olfactory hallucinations, were found in about one-third of the patients. The great majority of brain MRIs was normal, and most patients were seizure-free after introduction of AEDs.

5. Conclusion

Our case fulfills the diagnostic criteria of Butler and Zeman, apart from the fact that the patient did not present recurrent episodes after the introduction of an AED immediately after the EEG confirmed an epileptic seizure. Our patient was also in the upper range with regard to age. This is the second reported TEA case with ictal EEG. This TGA-like episode in which we could demonstrate temporal lobe epileptic seizures should confirm a diagnosis of TEA and prompt clinicians to perform EEG in any transient but atypical anterograde memory loss.

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Conflict of interest

Authors have no conflict of interest.

References

- [1] Bartsch T, Deuschl G. Transient global amnesia: functional anatomy and clinical implications. *Lancet Neurol* 2010;9:205–14.
- [2] Zeman AZ, Boniface SJ, Hodges JR. Transient epileptic amnesia: a description of the clinical and neuropsychological features in 10 cases and a review of the literature. *J Neurol Neurosurg Psychiatry* 1998;64:435–43.
- [3] Kapur N. Transient epileptic amnesia—a clinical update and reformulation. *J Neurol Neurosurg Psychiatry* 1993;56:1184–90.
- [4] Hodges JR, Warlow CP. Syndromes of transient amnesia: towards a classification. A study of 153 cases. *J Neurol Neurosurg Psychiatry* 1990;53(10):834–43.
- [5] Butler CR, Zeman AZ. Recent insights into the impairment of memory in epilepsy: transient epileptic amnesia, accelerated long-term forgetting and remote memory impairment. *Brain* 2008;131:2243–63.
- [6] Butler C, van Erp W, Bhaduri A, Hammers A, Heckemann R, Zeman A. Magnetic resonance volumetry reveals focal brain atrophy in transient epileptic amnesia. *Epilepsy Behav* 2013;28(3):363–9.
- [7] Kemp S, Illman NA, Moulin CJ, Baddeley AD. Accelerated long-term forgetting (ALF) and transient epileptic amnesia (TEA): two cases of epilepsy-related memory disorder. *Epilepsy Behav* 2012;24(3):382–8.
- [8] Bilo L, Meo R, Ruosi P, de Leva MF, Striano S. Transient epileptic amnesia: an emerging late-onset epileptic syndrome. *Epilepsia* 2009;50(5):58–61.
- [9] Mendes MH. Transient epileptic amnesia: an under-diagnosed phenomenon? Three more cases. *Seizure* 2002;11(4):238–42.
- [10] Walsh RD, Wharen Jr RE, Tatum WO. Complex transient epileptic amnesia. *Epilepsy Behav* 2011;20(2):410–3.
- [11] Midorikawa A, Kawamura M. Recovery of long-term anterograde amnesia, but not retrograde amnesia, after initiation of an anti-epileptic drug in a case of transient epileptic amnesia. *Neurocase* 2007;13(5):385–9.
- [12] Butler CR, Zeman A. A case of transient epileptic amnesia with radiological localization. *Nat Clin Pract Neurol* 2008;4(9):516–21.
- [13] Hornberger M, Mohamed A, Miller L, Watson J, Thayer Z, Hodges JR. Focal retrograde amnesia: extending the clinical syndrome of transient epileptic amnesia. *J Clin Neurosci* 2010;17(10):1319–21.
- [14] Favre JM, Vêran O, Payen I, Vercueil L. Transient epileptic amnesia: a case report and a reappraisal. *Geriatr Psychol Neuropsychiatr Vieil* 2011;9(1):83–9.
- [15] Soper AC, Wagner MT, Edwards JC, Pritchard PB. Transient epileptic amnesia: a neurosurgical case report. *Epilepsy Behav* 2011;20(4):709–13.
- [16] Ioannidis P, Balamoutsos G, Karabela O, Kosmidis MH, Karacostas D. Transient epileptic amnesia in a memory clinic setting: a report of three cases. *Epilepsy Behav* 2011;20(2):414–7.