Case Reports in Neurology

Case Rep Neurol 2019;11:238–241

DOI: 10.1159/000502086
Published online: August 16, 2019

Case Report

Transient Global Amnesia in a Patient with Pituitary Adenoma: Causal or Chance Association?

Seunghee Na[a] Eek-Sung Lee[b] Seung-Jae Lee[b]

[a]Department of Neurology, Incheon St. Mary's Hospital, The Catholic University of Korea, Incheon, South Korea; [b]Department of Neurology, College of Medicine, Soonchunhyang University, Bucheon, South Korea

Keywords
Transient global amnesia · Pituitary tumor · Hippocampus

Abstract
A 65-year-old man with no underlying medical history visited the neurology department due to transient amnesia lasting for about 8 h. During the amnesia episode, he was alert but showed repetitive questioning. The episode fulfilled the diagnostic criteria for transient global amnesia (TGA). On workups for excluding alternative diagnoses, the brain magnetic resonance imaging revealed a 3 × 6 cm-sized hemorrhagic pituitary tumor extending to the left medial temporal lobe and anterior hippocampus. The electroencephalogram revealed intermittent slowing in the left temporal region with normal backgrounds. The tumor was surgically removed and pathologically proven to be a nonfunctioning adenoma. At 6 months postoperatively, no complication or new amnestic episode occurred. Thus, our case had a typical TGA as the first manifestation of a pituitary tumor. There were no features of epileptic amnesia. Transiently altered flow status from a mass effect in the memory-eloquent area might be the possible pathogenic mechanism underlying the TGA though there still remains a probability of chance concurrence of TGA and tumor.

KARGER

Seung-Jae Lee, MD, PhD
Department of Neurology, College of Medicine, Soonchunhyang University
Soonchunhyang University Bucheon Hospital
170, Jomaru-ro Wonmi-gu Bucheon-si Gyeonggi-do 14584 (South Korea)
E-Mail neurosj@catholic.ac.kr

Introduction

Transient global amnesia (TGA) is a sudden loss of anterograde and retrograde memory lasting up to 24 h without any other neurologic deficit [1]. The pathophysiology has been suggested as ischemia, venous flow abnormality, epileptic activity, or migraine-related mechanisms involving memory-eloquent brain structures including the mediobasal temporal region and hippocampus [1].

TGA cases associated with brain tumors have been rare in the literature [2–9]. Among those, there have been only 2 cases associated with a pituitary tumor, to the best of our knowledge [3, 4], which had the characteristics of transient epileptic amnesia [10]. Here, we report another case of TGA associated with a pituitary tumor, which, however, had no feature of epileptic amnesia.

Case Report

A 65-year-old previously healthy right-handed man visited the memory clinic of Incheon St. Mary's Hospital with the complaint of transient amnesia that occurred 3 days ago. On the day of the event, according to his co-worker's witness, the patient repeatedly asked him about his daily routine but normally finished the work and then left for home by car. Because he did not return home on time, his spouse called him. She reported that the patient had stated "I don't know why I am driving now." Subsequently, she brought him home. However, he could not recall how he returned home. His co-workers and family members denied having observed any automatism-like movement or change of consciousness during the episode. He could normally communicate with family members except for repetitive questioning. Finally, the amnesia lasted for about 8 h. After the recovery, he could recall all the events that occurred after the amnestic episode.

At the memory clinic, bedside neurologic exams, including language and orientation, were all normal. A confrontation visual field test was also normal. The Mini-Mental State Examination (MMSE) score was 28/30 (3-word recall: 2/3), which was within normal limits for his age and education level. The brain magnetic resonance image revealed a 3 × 6 cm-sized pituitary tumor extending to and compressing the left medial temporal lobe and anterior hippocampus (Fig. 1a). The gradient echo image showed multifocal hemorrhagic foci within the mass (Fig. 1b). The electroencephalogram showed intermittent left temporal slow waves with normal backgrounds. Humphrey field testing, obtained during the preoperative workup, revealed bitemporal hemianopsia though there was no subjective symptom. The tumor was surgically removed in 2 steps by an endoscopic extended transsphenoidal approach with partial tumor removal and craniotomy with remaining tumor removal. It was pathologically proven to be a nonfunctioning pituitary adenoma. At 6 months postoperatively, no complication or new amnestic episode was reported.

Discussion

Our case meets the diagnostic criteria of TGA: (1) witnessed attack, (2) clear-cut anterograde amnesia, (3) no clouding of consciousness and loss of personal identity, (4) no focal neurologic symptoms; only cognitive impairment limited to amnesia, (5) no epileptic feature, (6) resolution within 24 h, and (7) no recent head injury or active epilepsy [1]. Typically, TGA

follows a benign course with spontaneous resolution and a low annual recurrence rate of <10% [1]. However, in our case, the large pituitary tumor could be the etiology of TGA, which necessitated brain surgery for the fundamental treatment.

Brain tumors have very rarely been found in the patients presenting with TGA. Among the cases, some tumors seem to have no causal association with the TGA episode because of their locations being distant from memory-eloquent structures (e.g., nondominant hemispheric tumor) [2, 4]. In such cases, brain tumors may be purely coincidental [2, 4, 5]. In contrast, in other cases, including ours, the tumors were close to or located in the memory-eloquent area [3, 6, 8, 9]. Such tumor lesions could likely change local brain waves or hemodynamic status in the memory-eloquent region, resulting in the amnesia episode [5, 6]. Thus, brain tumor could be considered as an etiology of TGA depending on its location though there still exists a probability of chance concurrence.

In the literature, a majority of cases of brain tumor associated with TGA had the characteristics of transient epileptic amnesia [10] rather than typical TGA, i.e., recurrent episodes [3–7], short duration of less than an hour [4–7], attack on waking [5], epileptic manifestation [6], and epileptic discharge on electroencephalography [7]. Their first episodes were likely to be regarded as typical TGA. Meanwhile, a few others, similar to our case, had no feature or evidence of epileptic amnesia [8, 9]. Thus, the pathogenesis of such cases might be sudden edema or hemorrhage in the tumor and an ensuing increased space-occupying effect leading to an alteration in local blood flow status in the memory-eloquent region [5, 6, 8, 9].

In some respects, our case is different from the 2 cases of pituitary tumor previously reported in patients with TGA. First, they had some characteristics of transient epileptic amnesia, such as recurrent episodes [3, 4] and short duration of less than an hour [4]. Second, 1 case seems not to have presented with a typical TGA in that they had an ongoing memory impairment in addition to transient episodes of amnesia [3]. Finally, in the other case, the tumor was compressing the nondominant (right) medial temporal lobe. Thus, it is hard to explain why TGA occurred in that case [4].

In summary, we report a case of pituitary tumor manifested as a typical TGA without features of epileptic amnesia. An increased tumor mass effect might have led to the transient dysfunction of memory-eloquent brain structures though a chance concurrence of TGA and tumor still remains possible. This suggests that, albeit extremely rare, pituitary tumor can be a differential diagnosis of TGA.

Statement of Ethics

The authors have no ethical conflicts to disclose.

Disclosure Statement

The authors have no conflicts of interest to declare.

Funding Sources

This study was supported by the Soonchunhyang University Research Fund.

Author Contributions

All authors met the criteria for authorship and have approved the contents of the text. S.N. acquired the patient data and wrote the first manuscript. All authors participated in the study concept, data interpretation, and the writing of the manuscript. S.-J.L. elaborated the final draft.

References

1 Bartsch T, Deuschl G. Transient global amnesia: functional anatomy and clinical implications. Lancet Neurol. 2010 Feb;9(2):205–14.
2 Findler G, Feinsod M, Lijovetzky G, Hadani M. Transient global amnesia associated with a single metastasis in the non-dominant hemisphere. Case report. J Neurosurg. 1983 Feb;58(2):303–5.
3 Hartley TC, Heilman KM, Garcia-Bengochea F. A case of transient global amnesia due to a pituitary tumor. Neurology. 1974 Oct;24(10):998–1000.
4 Honma Y, Nagao S. Hemorrhagic pituitary adenoma manifesting as transient global amnesia. Neurol Med Chir (Tokyo). 1996 Apr;36(4):234–6.
5 Milburn-McNulty P, Larner AJ. Transient global amnesia and brain tumour: chance concurrence or aetiological association? Case report and systematic literature review. Case Rep Neurol. 2015 Jan;7(1):18–25.
6 Shuping JR, Toole JF, Alexander E Jr. Transient global amnesia due to glioma in the dominant hemisphere. Neurology. 1980 Jan;30(1):88–90.
7 Meador KJ, Adams RJ, Flanigin HF. Transient global amnesia and meningioma. Neurology. 1985 May;35(5):769–71.
8 Sorenson EJ, Silbert PL, Benarroch EE, Jack CR, Parisi JE. Transient amnestic syndrome after spontaneous haemorrhage into a hypothalamic pilocytic astrocytoma. J Neurol Neurosurg Psychiatry. 1995 Jun;58(6):761–3.
9 Lisak RP, Zimmerman RA. Transient global amnesia due to a dominant hemisphere tumor. Arch Neurol. 1977 May;34(5):317–8.
10 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 Apr;64(4):435–43.

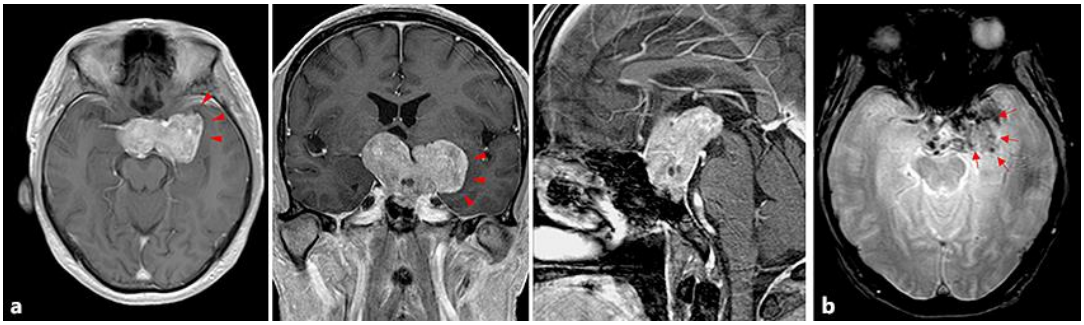

Fig. 1. **a** Contrast-enhanced T1-weighted axial, coronal, and sagittal images showed a 3 × 6 cm-sized pituitary mass (arrowheads) compressing the left medial temporal lobe and anterior hippocampus. **b** Gradient echo image revealed multiple small hemorrhagic foci (arrows) represented as hypointense lesions within the mass.