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Case Report

Transient Global Amnesia with Bilateral Hippocampal Findings in Magnetic Resonance Imaging.

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Abstract

Transient global amnesia (TGA) is an unusual neurological syndrome of unknown etiology that affects individuals between 50 and 75 years old. We describe the case of a 61-year-old woman, who experienced an episode of two hours of anterograde amnesia. The event had an acute onset and was observed by a reliable witness. It lacked motor or sensory symptoms, compromised consciousness, or personal identity. A brain magnetic resonance was performed 22 hours after the onset of symptoms depicting foci of restricted diffusion in both hippocampi. Taking into account clinical and imaging findings, the diagnosis of transient global amnesia was made.

Keywords: amnesia, transient global; amnesia, anterograde; magnetic resonance imaging, diffusion magnetic resonance imaging, hippocampus

Case History:

A 61-year-old Latin-American woman with a history of dyslipidemia and gastritis consulted the emergency room for an episode of anterograde amnesia. Symptoms began at 5:00 A.M. and lasted 2 hours. Witnesses reported that the patient exhibited no hallucinations or disturbances in behavior, executive functions, motor functions, working memory, or language during the event. After the event, the patient experienced headache, dizziness, nausea, and an inability to remember the episode. No trigger events were identified, and that morning, the patient did not consume any medicine.

At admission, her physical and mental explorations were normal and stable during a 2-day hospitalization period. Blood pressure remained within the normal range. Blood was tested for serum glucose, glycosylated hemoglobin, thyroid-stimulating hormone, and lipid panel levels. High levels of low-density lipoprotein (199 mg/dL) and pre-diabetic levels of glycosylated hemoglobin (5.9%) were found. Other blood test results were within the normal range. Electrocardiogram, transthoracic echocardiogram, carotid Doppler ultrasonography, and brain-computed tomography revealed normal results.

Brain magnetic resonance was performed 22 hours after symptom onset, revealing two foci of restricted diffusion on both hippocampi. The other sequences were normal (Figure 1 and 2). Taking into account clinical and imaging findings, transient global amnesia was diagnosed. The differential diagnosis considered in this case were bilateral lacunar stroke and transient epileptic amnesia.

After discharge, the patient was treated with atorvastatin for dyslipidemia and a strict diet was ordered. No medications were prescribed for transient global amnesia. A close follow-up was conducted for 10 months, without new symptoms. General recommendations were followed by the patient and their family.

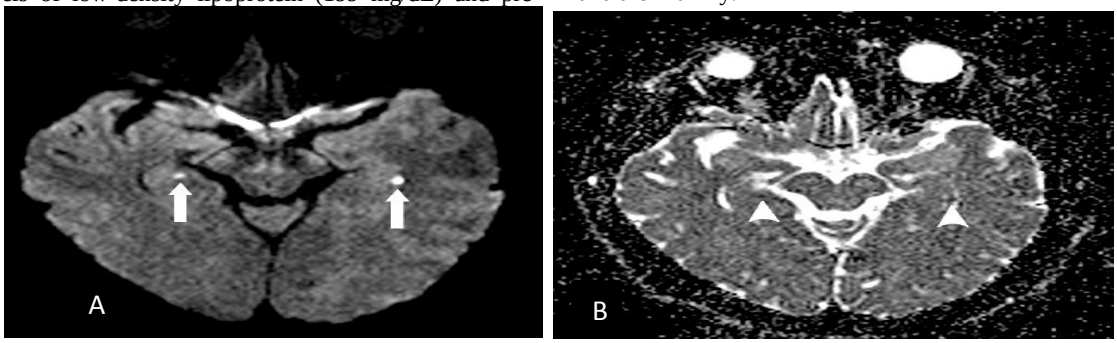

Figure 1: Axial brain MRI scan in a 61-year-old woman with an episode of two hours of anterograde amnesia that resolved completely. (A) diffusion weighted images (DWI) and (B) complementary apparent diffusion coefficient (ADC) map, depict two foci of restricted diffusion on both hippocampi, with high signal intensity in DWI (arrows) and low signal intensity in the ADC map (arrowheads).

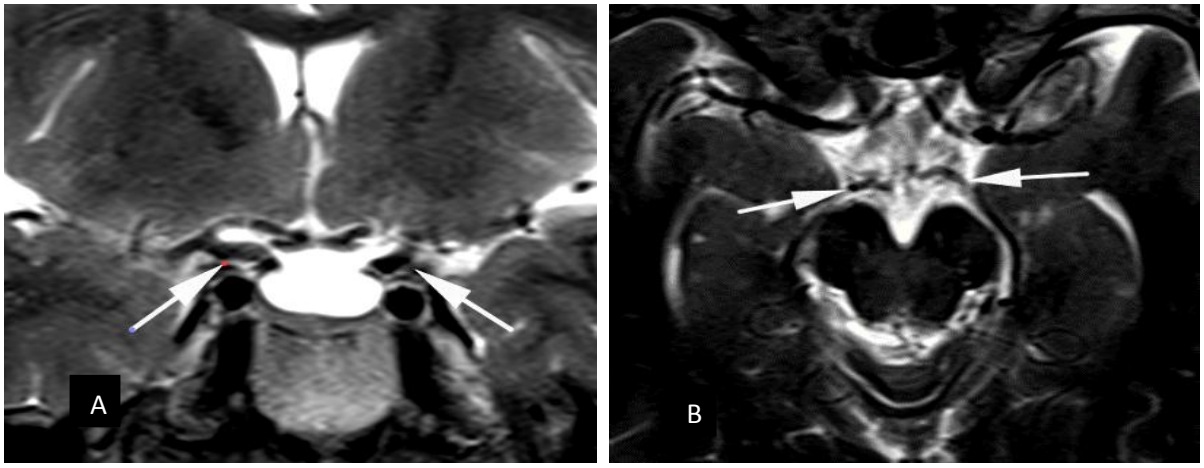

Figure 2: Coronal and axial T2 weighted MR images in the same patient show expected flow voids that imply permeability in A: the supraclinoid and terminal segments of the internal carotid artery, and (B) in the first segment of the posterior cerebral arteries.

Discussion

Transient global amnesia (TGA) is an unusual neurological syndrome with annual incidence rates between 3 and 10 per 100,000 inhabitants, affecting individuals between 50 and 75 years old. This syndrome is characterized by sudden onset of anterograde amnesia accompanied by mild vagal symptoms including headache, nausea, dizziness, sweating, and slight tremor, resolving in less than 24 hours, without other cognitive or motor impairments [1, 2].

Transient hippocampal focal alterations are the underlying cause of the characteristic symptoms of TGA, but its etiology and pathophysiology remain contentious. Several possible causes of disruption in local metabolism have been suggested, including hypoxia due to arterial spasm or venous congestion, focal transient ischemia, aberrant expression of receptors and neurotransmitters, or focal depolarization in susceptible subjects. Between 15%–50% of patients describe a triggering circumstance such as stress, abrupt temperature changes, migraine, or intense Valsalva maneuver. Associations with high blood pressure, dyslipidemia, smoking, alcohol, and migraine have been previously suggested [3-7].

Because of the anterograde amnesia is experienced by patients, a reliable witness is needed for accurate clinical diagnosis. Magnetic resonance (MR) is the only diagnostic tool reported to show positive and characteristic results for TGA. MR diffusion-weighted images (DWI) and complementary apparent diffusion coefficient (ADC) maps are used to identify cytotoxic edema in the region of interest. In TGA patients, these sequences exhibit small foci of hippocampal restricted diffusion [8-13].

It has been reported that MR performed between 48–72 hours after the onset of symptoms with continuous thin-slice acquisition revealed the characteristic hippocampal findings in 50%–85% of patients. One hippocampal focus is found in 46-69% of patients and bilateral foci in 31-50%. If bilateral hippocampal characteristic lesions are associated with an appropriate clinical history and normal neurological exam results after the event, TGA should not be excluded [8, 11, 14-16].

To exclude other diagnoses with a high degree of confidence when there is doubt, MRI and electroencephalography should be performed within an appropriate timeframe. If an accurate diagnosis is accomplished, the patient and their family can be instructed about the management of probable future events. The prognosis for TGA is generally good, so no drug is prescribed, and patients are instructed with diet and exercise. Follow up studies have reported an incidence of ischemic cerebrovascular disease similar to the general population (5%–7%), and no association with dementia [17-20].

Regarding the differential diagnoses, hippocampal isolated bilateral infarct incidence is very low (0.04%). Patients with anterior hippocampal infarcts report reduced wakefulness, hallucinations, memory deficits, motor sequence learning deficits, and seizures, symptoms that last more than 24 hours. In MR restricted diffusion can involve the entire hippocampus, the lateral part, the dorsal section, and less frequently, a small focus in his lateral segment can be found [21, 22].

Transient epileptic amnesia is a subtype of temporal lobe epilepsy that develops in the seventh decade. It produces episodes of transient anterograde amnesia without motor symptoms. Episodes are triggered during the transition between sleep and waking in 70% of patients, last 1 hour on average, and can coexist with automatism, olfactory hallucinations, and episodes of stupor. Electroencephalogram exhibit epileptiform patterns, focal slow wave changes, or no abnormalities. Brain MR is normal after the event [23, 24].

Conclusion

TGA is an unusual neurological syndrome that should be carefully considered in the older adult population. MR provides a highly accurate diagnostic tool if appropriately performed by experts. AGT diagnosis should not be ruled out if bilateral MRI hippocampal restriction foci are found in patients with an appropriate clinical history. If an accurate diagnosis is obtained, the patient and their family can be reassured by the prognosis and instructed about the management of probable future events.

Conflict of interest: The authors have no conflicts of interest

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