

## A Case of Transient Global Amnesia Due to Marijuana Use

### Esrara Bağlı Geçici Global Amnezi Vakası

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#### Abstract

Transient global amnesia (TGA) has been a well-described phenomenon for more than 40 years. It presents with a paroxysmal, transient loss of memory. Immediate recall ability and remote memory are preserved. However, patients experience striking loss of memory for recent events and an impaired ability to retain new information. In some cases, the degree of retrograde memory loss is mild. Marijuana induced transient global amnesia is a rare side effect. Here, we present a case of memory loss for a short period of time after use of marijuana. (*JAEM 2012; 11: 190-2*)

**Key words:** Marijuana, transient global amnesia, memory loss

#### Özet

Geçici global amnezi 40 yıldan fazla bir süredir iyi tanımlanmış bir olgudur. Paroksizmal, geçici hafıza kaybı olarak ortaya çıkar. Yakın hafıza ve uzak anılar korunur. Ama hastalar son olayları hatırlama ve yeni hafıza kaydında çarpıcı bir yitim yaşarlar. Bazı vakalarda geçmiş hafıza kaybının derecesi hafiftir. Esrara bağlı geçici hafıza kaybı nadir bir yan etkidir. Biz burada esrar kullanımı sonrası kısa bir hafıza kaybı olan vakayı sunuyoruz. (*JAEM 2012; 11: 190-2*)

**Anahtar kelimeler:** Esrar, geçici global amnezi, hafıza kaybı

#### Introduction

Transient amnesia is a temporary version of the amnesic syndrome. The most striking example of transient amnesia is the transient global amnesia (TGA) syndrome which lasts from several to 24 hours, with or without retrograde components of impairment, and any signs of neurological deficit in nature. In this syndrome, an otherwise cognitively intact individual suddenly loses memory of recent events, asks repetitive questions about his/her environment, and sometimes confabulates (1).

TGA is typically described as amnesia of sudden onset regarding events of the present and the recent past (2). It can be caused by central vascular or ischemic lesions. Diagnosis is primarily clinical but includes laboratory tests and radiologic evaluation. TGA typically remits spontaneously, but may recur. There is no specific treatment for amnesia. General stabilization of the patient is indicated (2).

Many patients are anxious or agitated and may repeatedly ask questions concerning transpiring events. In the neurologic examination only disturbed memory can be found (3). Upon mental status examination, language function is preserved, which indicates a preservation of semantic and syntax memory. Attention is spared, visual-spatial skills are intact, and social skills are retained. Symptoms

typically last less than 24 hours. As the syndrome resolves, the amnesia improves, but the patient may be left with a distinct lapse of recollection for events during the attack. The patient's behavior is normal except for incessant, repetitive questioning about his/her immediate circumstances (e.g., "What am I doing here?"; "How did we get here?") (4).

Cannabis is one of the most frequently used substances. Cannabis and its constituent cannabinoids are known to impair several aspects of cognitive function, with the most potent effects on short-term episodic and working memory in humans (5).

Marijuana is used by inhalation in cigars or taken orally. When it is taken by the oral route its effects are seen in a delayed manner, so the inhalation type is used mostly to achieve the desired psychoactive effects (6). After the cigar was burnt, the peak effects are seen in 20 minutes and disappear in 3 hours. A cigar of marijuana contains 5-20 mg THC (tetrahydrocannabinol). Approximately 50% of the THC pass to the alveolar spaces.

The most encountered psychotropic side effects of THC are; lethargy, sedation, euphoria, psychological relaxation, euphoria and sometimes, inhibition of the psychological inhibitions as alcohol does, disturbance in the perception of time and location (like feeling of delays in time and elongation of the distances), disturbance in the

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perception itself and the short term memory, loss of concentration in the acts that need more care and cognition (as in driving a car or heavy machines), making it hard to have mental concentration, imaginations, depersonalization, increased appetite and analgesia. When used in a social setting it may produce irresistible attacks of laughing and talkativeness (7).

Here we present a case of marijuana induced TGA, of which we found only two in the literature (2, 8).

## Case Report

A 38 year old male patient was brought to the emergency department with the complaint of memory loss for about one and a half hours. He was worried about himself and the dryness in his mouth. He did not remember how he got home. His friends did not report any unusual behavior before he left home after a meeting. On admission to the hospital, the patient was conscious, but he was asking his friends the same questions repeatedly: "We were together tonight, right? I don't know what happened to me." The vital signs were as follows: Temperature, 36.5°C; heart rate, 128 beats/min and regular; respiratory rate, 22 breaths/min; blood pressure, 120/65 mmHg, and the oxygen saturation was 99% in room air. He had conjunctival hyperemia and sinus tachycardia. Mild tremor was noticed in his upper and lower extremities. On neurological examination, no abnormalities were found except amnesia and disorientation at the time.

We found a glucose level of 93 mg/dl with a bedside glucometer. We performed an intravenous access and cardiac monitoring.

His electrocardiogram revealed sinus tachycardia and his computerized brain tomography was within normal limits. The complete blood count, urine analysis, liver enzymes denoted nothing abnormal. But toxicological urine screening was positive for (THC). With a thorough inquiry into the history, he confessed his marijuana usage, but he did not remember when he had last inhaled it. He could not remember if he had used marijuana on the same day. He was examined by the attendant neurologist. His electroencephalogram was in normal limits.

After a 12-hour observation period in the emergency department, conjunctival hyperemia and tachycardia returned to normal, but the retentive memory impairment was persistent. The patient was discharged from the hospital since there were no signs of vital threat.

After two weeks, we called the patient by phone and asked if he could remember the time period that he had not remembered at the night of the event. He stated that he still could not remember.

## Discussion

There are two mechanisms believed to explain marijuana induced temporary global amnesia:

- 1- A vasospasm which causes changes in cerebral blood flow (8-11).
- 2- A neurotransmitter blockage, given the demonstration that an endogenous cannabinoid system exists in the central nervous system and that cannabinoid receptors are relatively dense in the hippocampus (2, 9, 12-15).

In the literature we found only two cases of marijuana induced TGA (2, 8). After ruling out organic and metabolic causes of altered mental status, intoxication from alcohol and drugs should be considered.

In our case we detected THC in the urine. All other causes were excluded by laboratory tests and imaging modalities.

The classic presentation of transient global amnesia includes pronounced memory loss for recent events in the absence of focal neurologic signs, as in our case. It is remarkable that consciousness is well preserved in these patients (2, 16).

The patient may have difficulty in forming new memory, as illustrated in our case. Amnesia gradually resolves over several hours as the patient recovers (2).

In Turkey, the prevalence studies about substance use are rare and inadequate. Therefore, in emergency departments (ED) with high numbers of patients per day, the diagnosis of marijuana induced TGA is not easy to bear in mind. Further investigation and toxicological studies are not considered to perform and there may be many missed cases with marijuana induced TGA.

As the studies on prevalence of marijuana use become adequate and reliable, the physicians practicing in ED may be aware of the number of marijuana induced TGA cases in their routine examinations.

## Conclusion

The need to inform physicians in ED about the clinical findings of TGA may become prominent. As the awareness about TGA increases, the number of unnecessary computerized tomography and laboratory requests may be reduced simply by testing the urine for cannabis.

## Conflict of Interest

No conflict of interest was declared by the authors.

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