Epilepsi 2017;23(3):123-126 DOI: 10.14744/epilepsi.2017.85619

CASE REPORT / OLGU SUNUMU

Peri-ictal Water Drinking and Temporal Lobe Epilepsy: A Case Report

Peri-iktal Su İçme ve Temporal Lob Epilepsisi: Olgu Sunumu

Gülser KARADABAN EMİR, M.D.

Gülser KARADABAN EMİR, Yasemin ÜNAL, Gülnihal KUTLU

Department of Neurology, Muğla Sıtkı Koçman University Faculty of Medicine, Muğla, Turkey

Summary

Peri-ictal water drinking has been defined as the action of drinking during or within 2 minutes of a seizure. It can be seen in childhood or adulthood epilepsy. It is usually seen in adults with temporal lobe epilepsy. Peri-ictal water drinking is a rare vegetative symptom and has clinical significance in terms of being a lateralizing sign for the non-dominant hemisphere.

Key words: Epilepsy; peri-ictal drinking; temporal lobe epilepsy.

Özet

Peri-iktal su içme nöbet sırasında veya iki dakika içinde ortaya çıkan bir hareket olarak tanımlanır. Çocukluk çağı veya erişkin yaştaki epilepsilerde görülebilir. Erişkinlerde genellikle temporal lob epilepsilerinde görülür. Peri-iktal su içme nadir görülen bir peri-iktal vejetatif semptomdur ve non-dominant hemisfer için lateralizan belirtisi olması açısından klinik öneme sahiptir.

Anahtar sözcükler: Epilepsi; peri-iktal su içme; temporal lob epilepsi.

Introduction

Peri-ictal water drinking is defined as a movement that occurs during seizure or within two minutes of the seizure onset, and is described as a vegetative (involuntary) symptom that can be seen in both adulthood and childhood epilepsy. [1] Whereas tachycardia, blood pressure changes, mydriasis, redness in the face and face paleness are frequently seen peri-ictal vegetative symptoms in temporal lobe epilepsy, water drinking, vomiting, coughing, and urgency are seen rarely.[2]

In our study, we presented two patients with temporal lobe epilepsy, who had peri-ictal water drinking during video EEG monitoring.

Case Report

Case 1– A 32-year-old right-handed male patient admitted to the emergency department with the complaint of seizure two years ago. Contrast enhanced MRI revealed increased signal intensity on T2W and decreased signal intensity on T1W images without contrast enhancement in right lentiform and caudate nucleus involving the insular cortex and anterior segment of the right temporal lobe, and the patient was operated due to tumoral lesion (Figs. 1a-d). Diffuse astrocytoma was reported in his pathologic evaluation. When the patient admitted to our epilepsy clinic about two years after this operation, he was taking levetiracetam 3000 mg/day, phenytoin 400 mg/day, clobazam 35 mg/day, and had focal seizures with sudden feeling of fear, astonishment and answering the questions once every five days. The patient was hospitalized to our center of sleep and epilepsy monitoring for long-term video-EEG monitoring (VEM) for the evaluation of seizures. The patient had a seizure during the hospitalization. There was a sudden astonishment and

Submitted *(Geliş)*: 15.03.2017
Accepted *(Kabul)* : 27.03.2017
Correspondence *(İletişim)*: Gülser KARADABAN EMİR, M.D.
e-mail *(e-posta)*: g_karadaban@hotmail.com

a fearful expression on his face during the seizure. Slightly automatism was observed on the right hand in the meantime. At that moment, he was answering the questions. He said that he had a change of taste and the places of the furnitures in the room were changed. In the first minute of the seizure, water drinking was observed. During the seizure, fast activity starting from the right temporal lobe and followed by epileptic activity spreading to right temporal and the whole right hemisphere with "build-up" of theta activity were observed (Fig. 2a-c). There were no postictal EEG changes. Afterwards antiepileptic therapy of the patient was planned.

Case 2– A 25-year-old left-handed female patient was followed-upwith the diagnosis of epilepsy since she was 9 years old. She desired to drink water during the seizures, and afterwards she did not remember what happened. Her medical history revealed a febrile seizure history. Previous cranial magnetic resonance imaging was normal except of right cerebellar atrophy. She had four or five seizures in a day when she first admitted to our epilepsy clinic. Carbamazepine was added to lamotrigine of 300 mg/day treatment of the patient and the dose was increased to 800 mg/day, aafterwards lamotrigine treatment was ended gradually. Levetiracetam 1000 mg/day was added to the treatment due to the inadequate seizure control. Since no

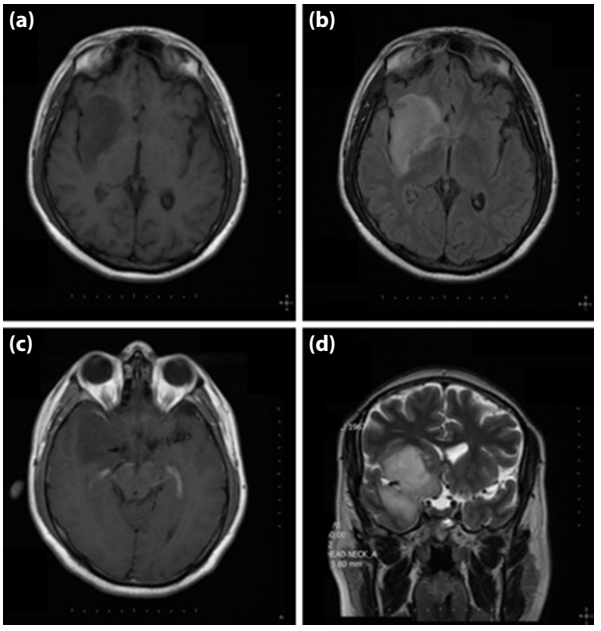

Fig. 1. **(a–d)** Hypointense increase in T1 analysis involving the insular cortex at the level of the right lentiform nucleus and caudate nucleus and anterior segment of the right temporal lobe, hyperintense increase in T2 analysis, gross signal increase without contrast.

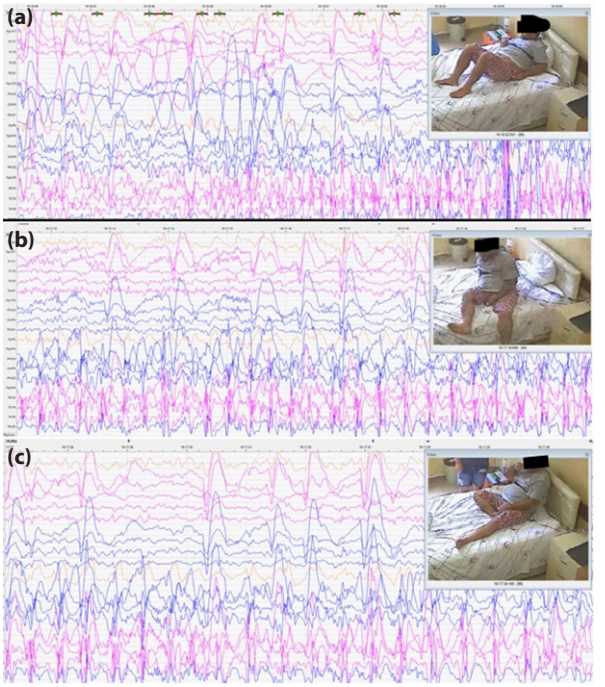

Fig. 2. **(a–c)** Seizure activity starting from the right temporal area and spreading to the right hemisphere.

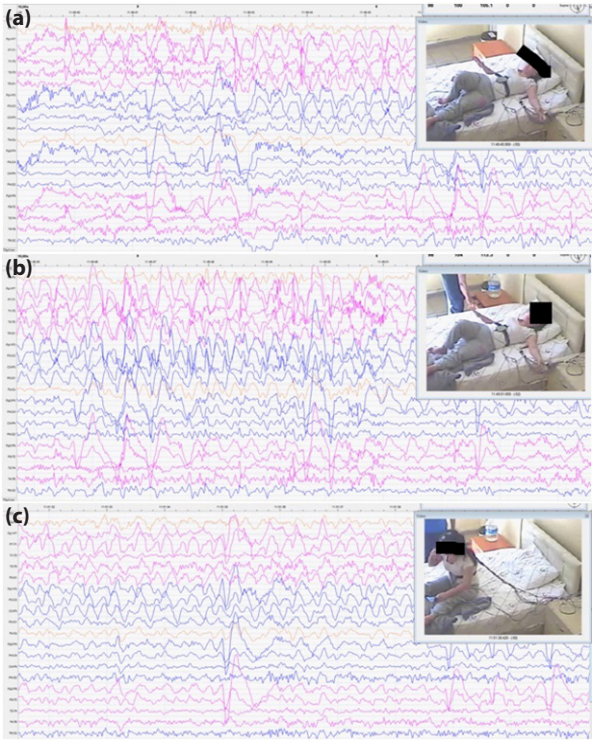

Fig. 3. **(a–c)** Seizure activity starting from the left temporal region.

change was observed in the seizures, the patient was hospitalized to the long-term video-EEG monitoring unit in our center of sleep and epilepsy monitoring to define seizure semiology and to be examined for the surgery. The patient had five seizures during the hospitalization. In the follow up of four seizures, the patient desired to drink water and then, oral automatism like lip smacking and dystonic contraction on the right hand were observed. At that time, she answered the questions, but later, she did not remember what happened. Thirty seconds after the seizure onset, she desired to drink water and she was observed to drink water at the second minute of the seizure. During the seizure, build-up of theta activity starting from the left temporal region was observed. This activity first spread to the entire hemisphere, and then to the frontal region of the left hemisphere (Fig. 3a-c). There were no postictal EEG changes.

Discussion

Peri-ictal (ictal and postictal) vegetative symptoms have been identified in both childhood and adulthood epilepsy.[3–5] It is observed usually in temporal lobe epilepsy in adults.[4–6] Peri-ictal vegetative symptoms can be listed as blood pressure changes, tachycardia or bradycardia, hyperventilation, apnea, bradypnea, salivation, nausea and vomiting, pilo-erection, increased sweating, mydriasis and myosis, and urge incontinence. Whereas tachycardia, redness in the face and face paleness, blood pressure changes and mydriasis are common peri-ictal vegetative symptoms, coughing, water drinking, vomiting, spitting, urge incontinence, stomach bloating, yawning, pilo-erection are rare peri-ictal vegetative symptoms.[2] Peri-ictal vegetative symptoms provide a better understanding of the central representation of the autonomic nervous system.[7] Some symptoms are leading for epileptogenic focus. They are useful in pre-surgical evaluation of patients with drug resistant epilepsy.[8]

Peri-ictal water drinking is defined as the activity of drinking water during electrical seizure activity or within two minutes of the seizure.[1,9] Peri-ictal water drinking is seen with a rate of 7–15.3% in temporal lobe epilepsy (TLE).[5,9,10] In previous studies, peri-ictal water drinking,[10] ictal spitting[11] and ictal vomiting[12] have been reported to be the sign of lateralization for the non-dominant hemisphere in temporal lobe epilepsy. Peri-ictal water drinking is of clinical importance since it is a rare peri-ictal vegetative symptom and a lateralization sign for the non-dominant hemisphere.[2]

Left hemisphere of the brain is usually responsible for language function. The hand preference of the person is important in determining the cerebral dominance in language functions. Whereas the left hemisphere is dominant by 99% for language in right-handed individuals, this rate is 70% in left-handed individuals, and right hemisphere is dominant by 30%.[13]

Our first case was right-handed, had right temporal lob related seizures, and had no speaking activity during the seizure. There was a tumoral mass in the right temporal region. Our second case was left-handed, had left temporal lobe epilepsy, and was speaking during the seizure and gave meaningful answers to questions. This suggests that the right hemisphere is dominant and left hemisphere is non-dominant for the language function. Studies supported that peri-ictal water drinking is a lateralization sign for non-dominant hemisphere.

Seizure activity starting from amygdala, hippocampus and parahippocampal gyrus was reported as the underlying mechanism of peri-ictal water drinking.[14] In a study by Musilová et al.,[2] seizures of 97 patients with temporal lobe epilepsy were examined. Peri-ictal water drinking was observed in 14.4% of the patients and 6.1% of the seizures. In addition, peri-ictal water drinking and peri-ictal coughing were significantly higher in patients with non-dominant hemisphere-onset TLE. In a study by Janszky et al.,[5] video records of 141 patients with temporal lobe epilepsy were reviewed before the epilepsy surgery. Peri-ictal water drinking was observed in 7% of the patients and no significant difference was found between males and females in terms of both hemispheres.

Conclusion

Peri-ictal water drinking is an important symptom because of being one of the rare vegetative symptoms seen in the temporal lobe epilepsy and is also a lateralization sign for non-dominant hemisphere. Patients generally do not state this symptom and an accurate history should be taken from patients and their relatives. Long-term VEM is also important in terms of observing the seizure.

Informed Consent

Written informed consent was obtained from the patients.

Peer-review

Externally peer-reviewed.

Conflict of interest
None declared.

Authorship Contributions
Concept: G.K.; Patient monitoring: G.K., G.K.E.; Data collection: Y.Ü., G.K.E.; Literature search: Y.Ü., G.K.E.; Critical review: G.K., Y.Ü.; Writing: G.K.E.

References

1. Pietrafusa N, Trivisano M, de Palma L, Serino D, Moavero R, Benvenga A, et al. Peri-ictal water drinking: a rare automatic behaviour in temporal lobe epilepsy. Epileptic Disord 2015;17(4):384–96.
2. Musilová K, Kuba R, Brázdil M, Tyrlíková I, Rektor I. Occurrence and lateralizing value of "rare" peri-ictal vegetative symptoms in temporal lobe epilepsy. Epilepsy Behav 2010;19(3):372–5.
3. Fogarasi A, Janszky J, Tuxhorn I. Autonomic symptoms during childhood partial epileptic seizures. Epilepsia 2006;47(3):584–8.
4. Loddenkemper T, Kotagal P. Lateralizing signs during seizures in focal epilepsy. Epilepsy Behav 2005;7(1):1–17.
5. Janszky J, Fogarasi A, Toth V, Magalova V, Gyimesi C, Kovacs N, et al. Peri-ictal vegetative symptoms in temporal lobe epilepsy. Epilepsy Behav 2007;11(1):125–9.
6. Fauser S, Wuwer Y, Gierschner C, Schulze-Bonhage A. The localizing and lateralizing value of ictal/postictal coughing in patients with focal epilepsies. Seizure 2004;13(6):403–10.
7. Benarroch EE. The central autonomic network: functional organization, dysfunction, and perspective. Mayo Clin Proc 1993;68(10):988–1001.
8. Rosenow F, Lüders H. Presurgical evaluation of epilepsy. Brain 2001;124(Pt 9):1683–700.
9. Szucs A, Fogarasi A, Rásonyi G, Kelemen A, Narula L, Tóth V, et al. Peri-ictal water drinking in temporal lobe epilepsy: Is it a reliable lateralizing sign? Epilepsy Behav 2007;11(4):578–81.
10. Trinka E, Walser G, Unterberger I, Luef G, Benke T, Bartha L, et al. Peri-ictal water drinking lateralizes seizure onset to the nondominant temporal lobe. Neurology 2003;60(5):873–6.
11. Voss NF, Davies KG, Boop FA, Montouris GD, Hermann BP. Spitting automatism in complex partial seizures: a nondominant temporal localizing sign? Epilepsia 1999;40(1):114–6.
12. Kramer RE, Lüders H, Goldstick LP, Dinner DS, Morris HH, Lesser RP, et al. Ictus emeticus: an electroclinical analysis. Neurology 1988;38(7):1048–52.
13. S.Kırbaş, VA. Yürekli, HR Koyuncuoğlu, A.Kırbaş. "Çapraz Afazi:İlki Olgu Sunumu." Düzce Tıp Dergisi 2011;13(2):48–50
14. Rémillard GM, Andermann F, Gloor P, Olivier A, Martin JB. Water-drinking as ictal behavior in complex partial seizures. Neurology 1981;31(2):117–24.