Peri-ictal Water Drinking in an Omani Patient with Bilateral Mesial Temporal Sclerosis

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Abstract

Peri-ictal water drinking (PIWD) is a rare vegetative manifestation of temporal lobe epilepsy without a definite lateralization value. We report a case of PIWD in a 22-year-old Omani man with post-concussion syndrome and epilepsy presented to a tertiary care hospital in Muscat, Oman in 2021 for evaluation of paroxysmal events. His behaviour of PIWD was misinterpreted by his family until characterized in the epilepsy-monitoring unit as a manifestation of epilepsy that was treated medically. To our knowledge, this is the second reported case in our region.

Keywords: Peri-ictal water drinking, Ictal Spitting, Epilepsy, Autonomic

Introduction

Vegetative manifestations have been well-described in patients with epilepsy during the seizure in both pediatric and adult age groups.1,2 Peri-ictal vegetative symptoms (PIVS) may occur without any particular relationship to the cause of epilepsy.3 PIVS include cardiovascular, respiratory, gastrointestinal, and urinary signs and symptoms. Peri-ictal water drinking (PIWD) is an infrequently described automatism in an epileptic patient, often among those with temporal lobe epilepsy.3,4 Among patients with focal epileptic seizure, 65 cases only are reported to have
Peri-ictal water drinking behavior. PIWD has been defined as the urge to drink water ictally or up to 2-minute in the post-ictal phase of epileptic seizures. Peri-ictal water drinking as a manifestation of epileptic seizure signifies a reliable sign of lateralization to a non-dominant temporal lobe.

Herein, we report a case of peri-ictal water drinking (PIWD) in a 22-year-old man with post-concussion syndrome with bilateral mesial temporal sclerosis. To our knowledge, this is the second reported case in our region. We found that PIWD has localizing but no lateralizing value.

Case report

A 22-year-old right-handed man had a road traffic accident at the age of 11 years and suffered a post-concussion syndrome with behavioural changes of impulsiveness and seizures. His seizures were described as chest discomfort followed by lip and hand automatism and excessive water drinking during the event. His family thought that he would drink water to relieve his chest discomfort. After that, he was routinely offered a bottle of water whenever his seizure started, in the context of this recurrent habitual behaviour.

To better characterize his seizure semiology and localize the ictal onset, he was admitted for 3-day in the Epilepsy Monitoring Unit at a tertiary care hospital in Muscat, Oman for long-term EEG evaluation (Figure 1). During evaluation, his anti-seizure medications (ASM) including Lacosamide 200 mg BID, Sodium Valproate SR 750mg AM/1000 mg PM and Clobazam 15mg AM/20 mg PM were tapered off. His interictal recording showed intermittent slowing in the right temporal chain and bitemporal sharp waves: 80% on the right (maximum at F8>T4), 20% on the left (maximum at F7>T3). He had five seizures of the same semiology. Seizures started with him holding his chest, either due to discomfort or as a reaction to a gastric aura. This was followed by swallowing movements and hand automatism. Out of 5 seizures, 3 seizures had clear water drinking during the seizure or after the seizure terminated. He would ask for or grab a nearby water bottle to drink multiple times. The water bottles were 500 ml, and he drank almost 2/3 the amount of the bottle in each seizure. During the other 2 seizures, the patient was alone, and his behaviour seemed restless, looking for water through his bed sheets but not found. He would always ask for water and no other types of fluids.
Table 1 summarize the details. (Any gross variations in the pattern of seizure may be summarized here in 1-3 sentences. Rest of the paragraph may be superfluous. The table gives fair details). In seizure 1, he used his hands to perform body language to his attendant indicating the need to drink. He grabbed the bottle again from his attendant to drink the second and third time after giving it back after first request to drink. In the third time, he pointed to his chest as of explaining the reason for drinking. All 3 events of water drinking in seizure one happened ictally. In seizure 2, he drank twice ictally and 24 seconds post ictally. In both events, he grabbed the water bottle off his attendant’s hand to drink. In seizure 3, the seizure woke him up from sleep while the attendant was not aware of the event. There were no water bottles close to him, so he seemed restless and looking around the room frequently. Finally, he got off bed and walked around the bed but that was not visualized by the video. In the 4th seizure, again he was alone and seemed restless when the seizure started as attendant was not around. There was a bottle close to his pillow, but he did not visualize it. He seemed in discomfort and wiping his face and left nose multiple times with his hands. In seizure 5, it started again by chest sensation as he held his hands against his chest then started swallowing movements. His attendant walked into the room and patient pointed by hand gestures that he wants to drink and again pointed to his chest as of explaining his reasoning. He started spitting and he drank all the bottles given to him (~ 400 ml).

His MRI brain showed evidence of bilateral hippocampal atrophy and bilateral mesial temporal sclerosis (Figure 2). His PET/CT of brain was unremarkable with no focal hyper or hypometabolism. The patient’s consent was obtained for publication purposes.

**Discussion**

Peri-ictal water drinking was first reported upon a statistical review of aura in epilepsy among 1359 cases by Lennox, defined as the urge of drinking water ictally or up to 2-minutes in the post-ictal phase of epileptic seizures. Seeking water in epileptic patients has been noticed mostly in ictal phase, yet post-ictal water drinking has been reported as well. Reported cases of PIWD in literature remain infrequent all over the world, with around 65 cases have been reported to date, including one case in our region.
Water-seeking behavior has been correlated electro-clinically and neuropathologically with pathologies in the mesial temporal lobe, emphasizing further on the value of localization hypothesis. However, a recently published retrospective study in surgically confirmed patients with focal epilepsy in which PIWD occurs more often in frontal lobe epilepsy (FLE) than temporal lobe epilepsy (TLE) indicating that PIWD might not be specific symptom of TLE. The epileptic discharges in our patient’s seizure confirmed the localization hypothesis of temporal lobe origin. The epileptic discharges from the temporal lobe structures propagating to the hypothalamus is proposed to be a stimulus for water-seeking behavior and sense of thirst in epilepsy.

Several cases of peri-ictal water drinking have been published in the literature highlighting the value of lateralization of peri-ictal water drinking in patients with temporal lobe epilepsy. Water seeking behavior has been concluded as a sign representing epileptic focus on the non-dominant temporal lobe. This lateralization may be explained by asymmetrically represented network of central autonomic system implemented in water-seeking behavior, control of fluid and thirst. However, other studies have shown no consistent lateralization of epileptiform activity in similar cases. In our patient, we could not conclude definite lateralization as he had seizures with water drinking behavior evident in either of the temporal lobes. Even though, seizures number 1 and 2 that originated from the right temporal lobe started earlier at 12 and 15 seconds compared to seizure number 5 that may argue that it lateralizes to the non-dominant hemisphere. However, we have incomplete data of seizure number 3 and 4 that may change the equation, therefore, the significance of lateralization in patient presenting with Peri-ictal water drinking is still uncertain as demonstrated in our case.

The autonomic manifestations of epilepsy have a risk to progress into status epilepticus as reported in the literature. Therefore, the importance of detecting other semiologies of epileptic events as autonomic manifestations such as cardiac and respiratory, is very crucial as it may lead to sudden unexpected death in epilepsy (SUDEP).

As noticed in our case, the patient had also other epileptic semiologies of temporal origin like post-ictal spitting. Spitting as an ictal phenomenon which has been evoked by direct electrical
stimulation to temporal lobe in many trials, confirming the value of localization again with no lateralization value.\textsuperscript{15}

Focal epileptic syndromes are estimated to affect 60\% of patients with epilepsy, in which 15\% of those patients’ condition cannot be controlled by anti-seizure medications adequately and as observed assumption, half of them may be considered potential candidates for a surgical intervention of epilepsy. A published case of middle-aged man diagnosed with epilepsy since childhood with features of peri-ictal water drinking on anti-seizure medications of right temporal lobe origin, remained seizure-free in 1-year follow up after right anterior temporal resection.\textsuperscript{7} Moreover, a recent retrospective study discussing occurrence of PIWD in focal epilepsy patients with favorable outcome postoperatively, including frontal lobe epilepsy (FLP) and temporal lobe epilepsy (TLE) signifying the value of preoperative evaluation in patients with focal epileptic syndromes.\textsuperscript{9} In the present case, the patient had bi-temporal lobe epilepsy secondary to bilateral mesial temporal sclerosis that was better controlled with anti-seizure medications but has significant behavioral issues requiring follow up with psychiatry. A multidisciplinary discussion to consider if he would benefit from surgical management aimed at improvement in both his seizures and behavioral issues is planned.

Conclusion

Peri-ictal water drinking, and ictal spitting are infrequent vegetative symptoms seen in the temporal lobe epilepsy without a definite lateralization value.

Authors’ Contribution

YA did the literature review and wrote entire discussion and analysed of the case. HA wrote the case, analysed the EEG findings in detail with tables and supervised the entire paper. AG reviewed the paper. All authors approved the final version of the manuscript.

Reference:


Table 1: Summary of seizures, EEG onset, duration and details of water drinking phenomenon. Sz (seizure), sec (seconds), NA (not available).

<table>
<thead>
<tr>
<th></th>
<th>EEG Onset</th>
<th>Sz Duration</th>
<th>Onset of first drinking during a sz</th>
<th>Number of times drinking during the sz</th>
<th>Further remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sz # 1</td>
<td>Right Temporal</td>
<td>44 sec</td>
<td>12 sec</td>
<td>3 times</td>
<td></td>
</tr>
<tr>
<td>Sz # 2</td>
<td>Right Temporal</td>
<td>66 sec</td>
<td>15 sec</td>
<td>2 times during a sz and 1 after sz ends (1.5 min after sz ended)</td>
<td></td>
</tr>
<tr>
<td>Sz # 3</td>
<td>Left Temporal</td>
<td>47 sec</td>
<td>NA</td>
<td>NA</td>
<td>Nocturnal seizure</td>
</tr>
<tr>
<td>Sz # 4</td>
<td>Left Temporal</td>
<td>54 sec</td>
<td>NA</td>
<td>NA</td>
<td>Left nose wiping</td>
</tr>
<tr>
<td>Sz # 5</td>
<td>Left Temporal</td>
<td>63 sec</td>
<td>55 sec</td>
<td>1 time</td>
<td>Post Ictal spitting</td>
</tr>
</tbody>
</table>
Figure 1: (A) Ictal EEG onset with rhythmic discharges in the right temporal chain, maximum at F8/T4. (B) Ictal EEG onset with rhythmic discharges in the left temporal chain, maximum at T3.
Figure 2: MRI brain (A) Flair, (B) T2 that both showed evidence of bilateral hippocampal atrophy and mesial temporal sclerosis.