Ictal Thirst- A non-dominant temporal lobe seizure manifestation.

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BACKGROUND

This study shows that ictal thirst is a manifestation of non-dominant temporal lobe seizures.

In a study using PET, thirst caused activation in the anterior cingulate (Brodmann area 32) and the insula. This study used positron – emission tomography to establish the patterns of brain activity involved in the thirst.

In another functional neuroimaging study thirst induced by hypertonic i.v.infusion activations were observed in the anterior and posterior cingulate, parahippocampal and orbital frontal gyri, insula, claustrum, thalamus, and cerebellum. There was also activation in the postcentral gyrus which disappeared with wetting the mouth. Overall, the pattern of activations and deactivations found when thirst was maximal, it involved phylogenetically ancient areas of the brain. This pattern is consistent with the vegetative systems having emerged early in the transition of vertebrate animals from river and estuarine systems to dry land. Study was done using PET and fMRI2.

These studies present a bias by which a temporal lobe seizure can cause thirst.

MATERIALS AND METHODS

The epilepsy monitoring database (2001-2007) of the University of Nebraska Center was searched for patients with a definite history of ictal thirst. All available data of the patients, particularly their original video and EEG data, were reviewed.

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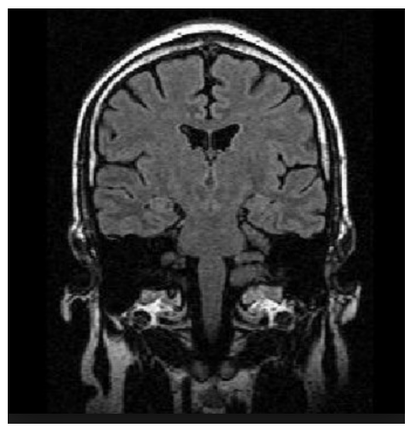
MRI Brain

Patient 1 : showing right mesial temporal sclerosis.



RESULTS

Out of over 200 monitored patients 2 were found to have thirst as an ictal manifestation.

The first patient had 4 seizures during the monitoring, she asked for water during each one of these and drank water as if she was thirsty during ictal EEG discharge. The ictal EEG seizure onset was from the right temporal lobe. The MRI showed right mesial temporal sclerosis, as seen in figure 1 & 2. She is seizure free on 3 antiepileptic medications.

Nine seizures were recorded in the second patient. She drank water in each of them as if she was thirsty during ictal EEG seizure discharge. In 5 seizures she had other objects available to choose from but she always picked up the water jug and drank water. The ictal EEG seizure onset was from the right temporal lobe in every seizure. The MRI Brain showed a right medial temporal cystic lesion. The patient underwent a surgical resection of the lesion and has been seizure free for 25 months.

CONCLUSIONS

Ictal thirst is an uncommon feature of temporal lobe seizures. It is not an automatism as the patient either asked specifically for water and drank it as if she was thirsty or chose a jug of water from a myriad other objects available and then drank a significant amount of it as if quenching her thirst. It is likely that the thirst center lies outside the medial temporal area but the connections of the medial temporal area render it capable of influencing such behavior. A recent study of functional neuroimaging of thirst showed maximum thirst sensation evoked 13 highly significant activations and 9 deactivations in cingulate and parahippocampal gyri, insula, thalamus, amygdala, and mesencephalon. This does explain how thirst can be a manifestation of medial temporal lobe epilepsy. Recognition of such seizure manifestation is important in identifying seizures and aids in the correct localization of seizure focus.