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ICTAL ASYSTOLE IN TEMPORAL LOBE EPILEPSY– RARE CASE REPORT

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Abstract:

Autonomic changes and cardiac alterations associated with epileptic seizures are common during video electroencephalography(VEEG) monitoring. Cardiac arrhythmia may be in the form of tachycardia, bradycardia or asystole. Ictal asystole is the lack of ventricular complexes accompanied by electrographic seizure onset. Ictal bradycardia and asystole are unusual and often lead to sudden unexpected death in epilepsy patients. Here we are describing a case of 65 years old lady with history of focal seizure; probable temporal lobe origin. She underwent simultaneous VEEG and electrocardiogram (ECG) monitoring. Cardiac asystole was seen during focal onset seizure episode. Epileptic seizures can present with cardiac arrhythmias; simultaneous EEG and ECG are essential for the diagnosis and management.

Introduction:

Epileptic seizures often influence the heart rate leading to arrhythmias [1]. Ictal tachycardia is the most common arrhythmia associated with epilepsy, but ictal bradycardia usually occurs in less than 6% of seizures [2]. Sometimes this slowing of heart rhythm may be severe enough to cause ictal asystole. Ictal asystole defined as the absence of ventricular complexes for more than 4 s, accompanied by electrographic seizure onset [3]. In epilepsy monitoring units ictal asystole is reported only in 0.27–0.4% of patients [4,5]. Around Eighty percentages of cases are associated with temporal lobe epilepsy while Twenty percentages of cases associated with extra temporal lobe seizures [6,7]. Identification of cardiac arrhythmia is very important because ictal bradycardia and ictal asystole may direct to sudden unexpected death in epilepsy (SUDEP) [8,9].

Case report

Sixty five years old right-handed south Indian woman came for VEEG monitoring with the complaints of recurrent attacks, characterized by dizziness followed by loss of consciousness, automatism and stereotyped motor movements in limbs. No urinary incontinence or tongue biting was reported. Neurological examination and magnetic resonance imaging (MRI) were within normal limits. On detailed clinical history, there was no negative perinatal history, no family history of epilepsy, no consanguineous marriage, and no other medical co-morbidities. Sometimes these attacks were related to psychological or mental stress; so the patient was referred for short term VEEG monitoring.

The VEEG recording was performed using a Xltek, Natus neurology (Canada). In addition to the internationally accepted 10–20 electrode placement system, ECG and electromyography (EMG) channels were included. During the recording patient had two habitual events; she had lost contact and began experiencing motor automatism in the form of repetitive movements of the right hand and early head and eye deviation to left followed by clonic jerky movement of right upper limb. Corresponding EEG showed rhythmic theta followed by sharp waves confined to left temporal area. The ECG channel showed ictal asystole after 7 seconds after the ictal onset. (Figure 1). During the ictal period EEG showed rhyhthmic theta sharp waves were confined to left temporal area while simultaneous ECG showed cardiac asystole; lasted about 19 seconds (Figure 2). During the post ictal phase cardiac arrhythmias was seen in the form of bradycardia (Figure 3).

Discussion

A complex connection exists between seizures and the heart. Epileptic activity initiating in the amygdala, insular cortex, cingulate gyrus, frontopolar region, and frontotemporal region can create a broad range of cardiac abnormalities, including supraventricular tachycardia, sinus tachycardia, sinus bradycardia, sinus arrest, atrioventricular block, and asystole [4] . Intra operative stimulation of the human insular cortex disclose that right insular stimulation leads to tachycardia while left insular stimulation leads to bradycardia and depressor responses [10].

Patients with chronic epilepsy disorders usually will have ictal bradycardia due to recurrent seizures or anti seizure drug therapy, which may impair neurocardiac regulatory system [11]. Ictal asystole will be one of the reason if the patient having typical semiology associated with syncopal attacks [12, 13]. It is very essential to differentiate between primary cerebrogenic and cardiogenic causes of arrhythmia. In those cases; simultaneous recording of EEG and ECG may help to resolve the problems. Usually in primary cerebrogenic, electrical ictal onset precedes the bradyarrhtyhmia .

In this case, EEG ictal onset was seen before commencing the cardiac asystole. However; this case is a diagnostic challenge and difficult to be diagnosed. Patient referred to Cardiology section for detailed evaluation. Epileptic seizures can present with cardiac arrhythmias and ictal asystole, which may lead to sudden unexpected death. Simultaneous EEG and ECG recordings are essential for diagnosis. Anti seizure drug optimization and may be a cardiac pacemaker can be lifesaving for patients with ictal arrhythmias. Patient is under close follow up. Anti seizure drug optimisation and further cardiac evaluation for pace maker implantation recommended.

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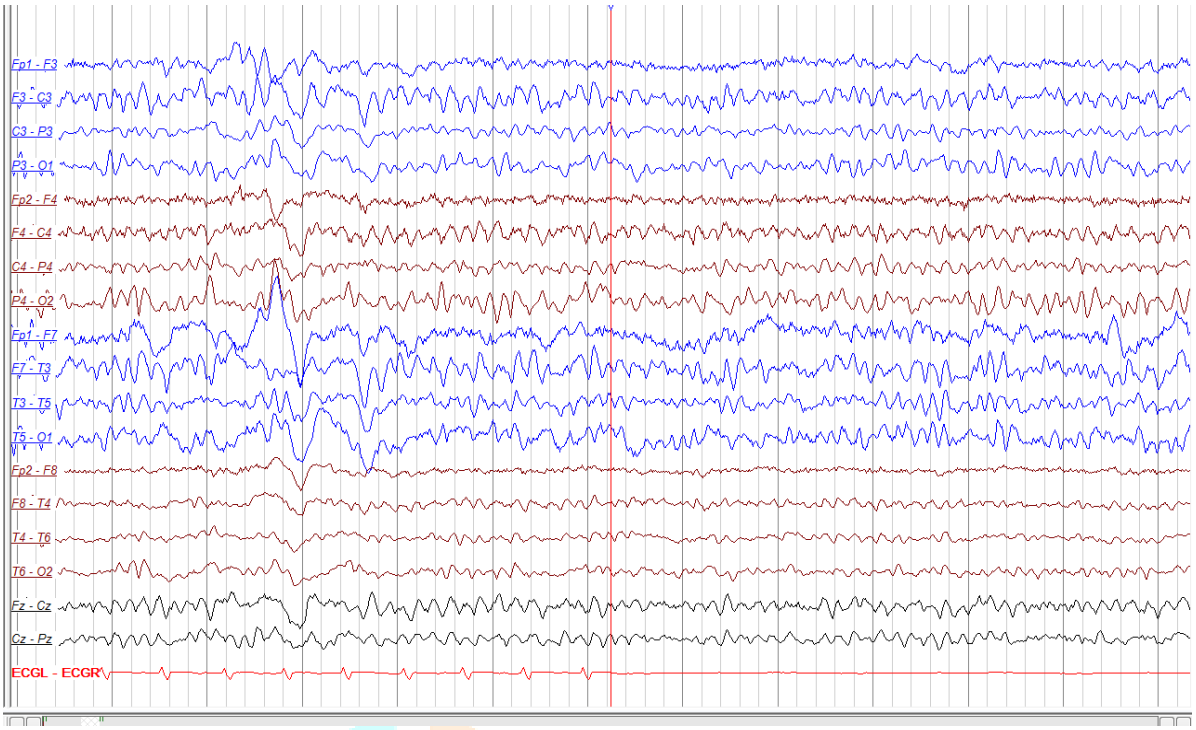

Figure 1: Ictal onset EEG shows rhythmic theta discharges with an evolution followed by cardiac asystole.

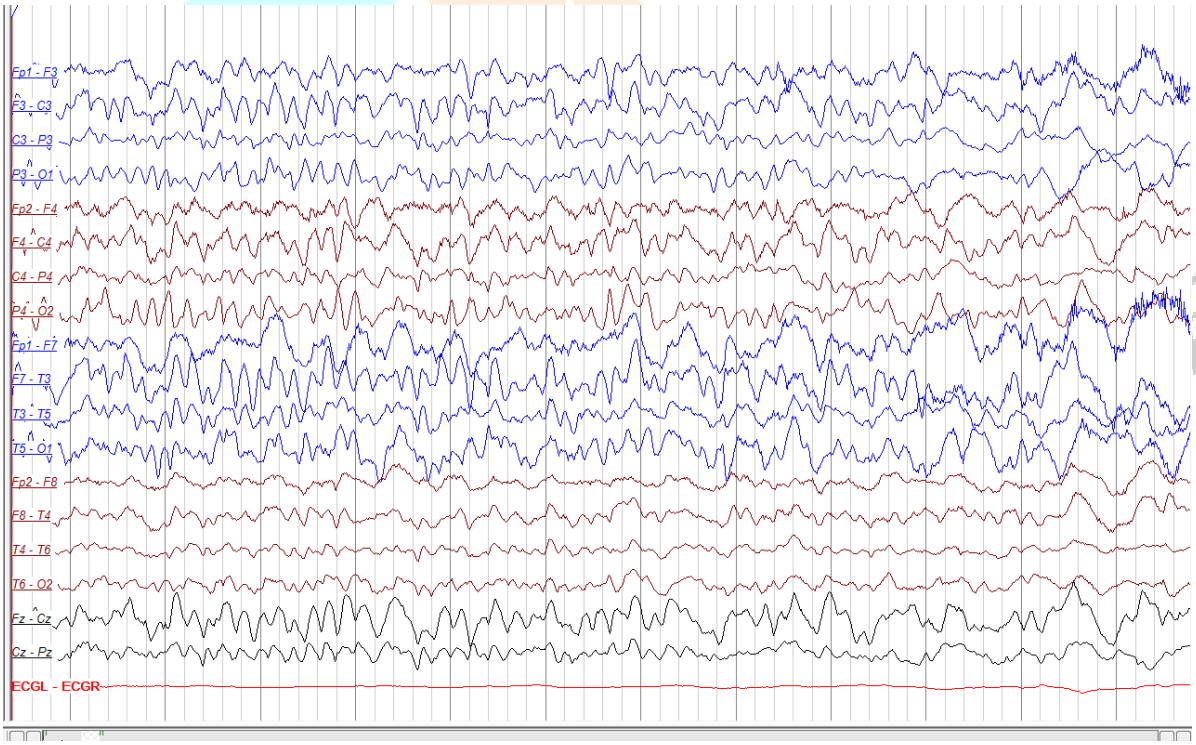

Figure 2 : Ictal EEG recording: rhythmic theta sharp waves were seen over left temporal area. ECG trace shows cardiac asystole.

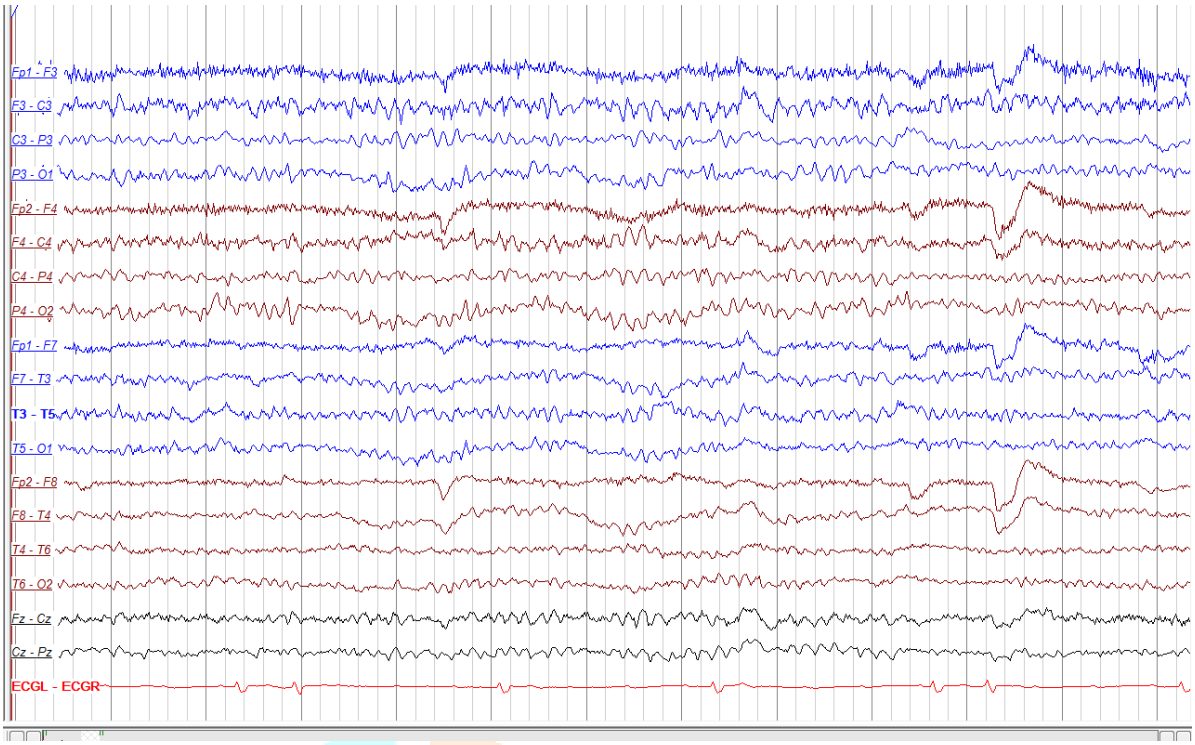

Figure 3: Post ictal EEG recording; cardiac arrhythmia in the form of bradycardia.