



Case Report

The ictal bradycardia syndrome: A case report[☆]Ilaria Fava^a, Salvatore Del Gaudio^b, Enrico Volpe^b, Giuseppe Paolisso^a, Maria Rosaria Rizzo^{a,*}^a Department of Medical, Surgical, Neurological, Metabolic and Geriatric Sciences, Second University of Naples, Piazza Miraglia 2, 80138 Naples, Italy^b Department of Emergency Medicine, Pineta Grande Hospital, Castel Volturno, Caserta, Italy

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ABSTRACT

We report a case of a 56-year-old man affected by frontal lobe seizures who has developed bradycardia followed by asystole. The patient had a positive family history for epilepsy. In fact, the mother, brothers, and one sister had epilepsy. Furthermore, the patient's two brothers suddenly died of unspecified heart disease at the ages of 26 and 53, respectively. The patient also experienced syncope once or twice a year. Three similar epileptic seizures, without the recurrence of asystole, were registered after pacemaker implantation.

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1. Introduction

Cardiac arrhythmias are frequently reported during epileptic seizures. In particular, increased heart rate has been reported to occur in 64–100% of temporal lobe seizures, while bradycardia (heart rate below 60 beats per min) has been reported to occur in only a small percentage of cases (less than 6%) [1]. Patients with seizure-related bradyarrhythmias, labeled ictal bradycardia syndrome [2], suffer mainly from temporal lobe epilepsy or from extratemporal seizures or from other brain regions, independently of the laterality of the epileptogenic focus [1].

To date, the physiologic mechanism involved in the association between epileptic seizures and cardiac arrhythmias is poorly understood. It is likely that several different mechanisms exist. Indeed, many studies have been focused on seizure-related cardiac arrhythmias as bradyarrhythmia, cerebral depression, and autonomic dysfunction [3]. An abnormal neuronal activity during an epileptic seizure in the center of the central autonomic nervous system has been demonstrated, resulting in changes of cardiac rhythm [3].

Diagnosis of ictal bradycardia syndrome is underestimated probably because patients with bradyarrhythmias are usually admitted to

cardiology services whereas patients with epileptic seizures are admitted to neurologic services. Therefore, both the electroencephalogram (EEG) and electrocardiogram (ECG) are exams not routinely performed simultaneously. Nevertheless, getting the diagnosis of ictal bradycardia syndrome can be of critical relevance since bradyarrhythmias play an important role in Sudden Unexpected Death in Epilepsy (SUDEP) [3]. Indeed, asystole followed by syncope and sudden death could be the consequence of bradyarrhythmias. At the moment, no guidelines for the management of patients with ictal bradycardia syndrome exist.

Here, we report the case of a patient with frontal lobe seizures who developed bradycardia followed by asystole.

2. Case presentation

A 56-year-old Caucasian man, with epilepsy from adolescence, treated with phenobarbital 100 mg/day, was hospitalized for pneumonia complicated by acute respiratory failure. He had also experienced syncope once or twice a year. The patient did not have any history of cardiovascular disease or diabetes, but he had a positive family history for epilepsy. His family consisted of his mother and father, two brothers, and one sister. Except for the father, all members of the family had epilepsy. His two brothers with epilepsy both suddenly died of unspecified heart disease at the ages of 26 and 53, respectively.

During hospitalization, when pneumonia had resolved and the complete hematological examination showed normal parameters, several episodes of bradycardia and one episode of asystole occurred after the onset of the epileptic seizures. Immediately after the epileptic seizure, the ECG revealed sinus bradycardia (<30 beats/min) (Figs. 1A and B) followed by asystole lasting 8 s and hypotension (70/40 mm Hg) (Fig. 1C), spontaneously returning to normal sinus rhythm

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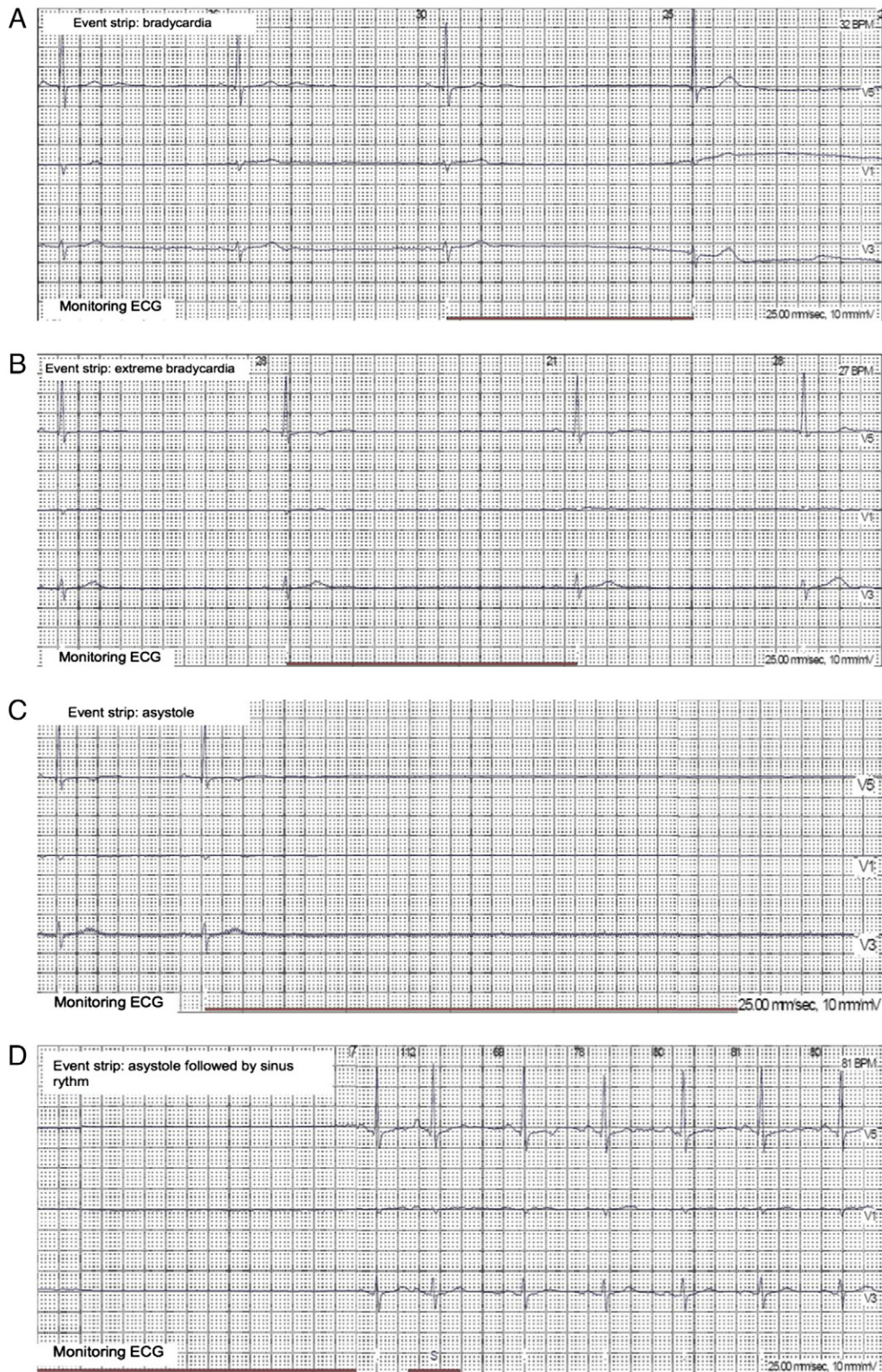


Fig. 1. ECG monitoring during and after the epileptic seizures showed a progressive prolongation of RR intervals (A) with a subsequent sinus bradycardia (<30 beats/min) (B) followed by asystole lasting 8 s (C), spontaneously returned to normal sinus rhythm of 80 beats/min (D).

of 80 beats/min (Fig. 1D) with normalization of blood pressure. The physical examination revealed no specific findings, while he reported symptoms of confusion, anxiety, and nausea. The computerized tomography imaging results were normal. Although the patient had been treated

with oxcarbazepine, four episodes of epileptic seizures and sustained bradycardia developed 48 h later.

Unfortunately, during the epileptic seizures, only ECG monitoring and respirogram were available. Baseline EEG, performed a few days

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