

Unexplained syncope and bundle branch block: an electroencephalogram diagnosis

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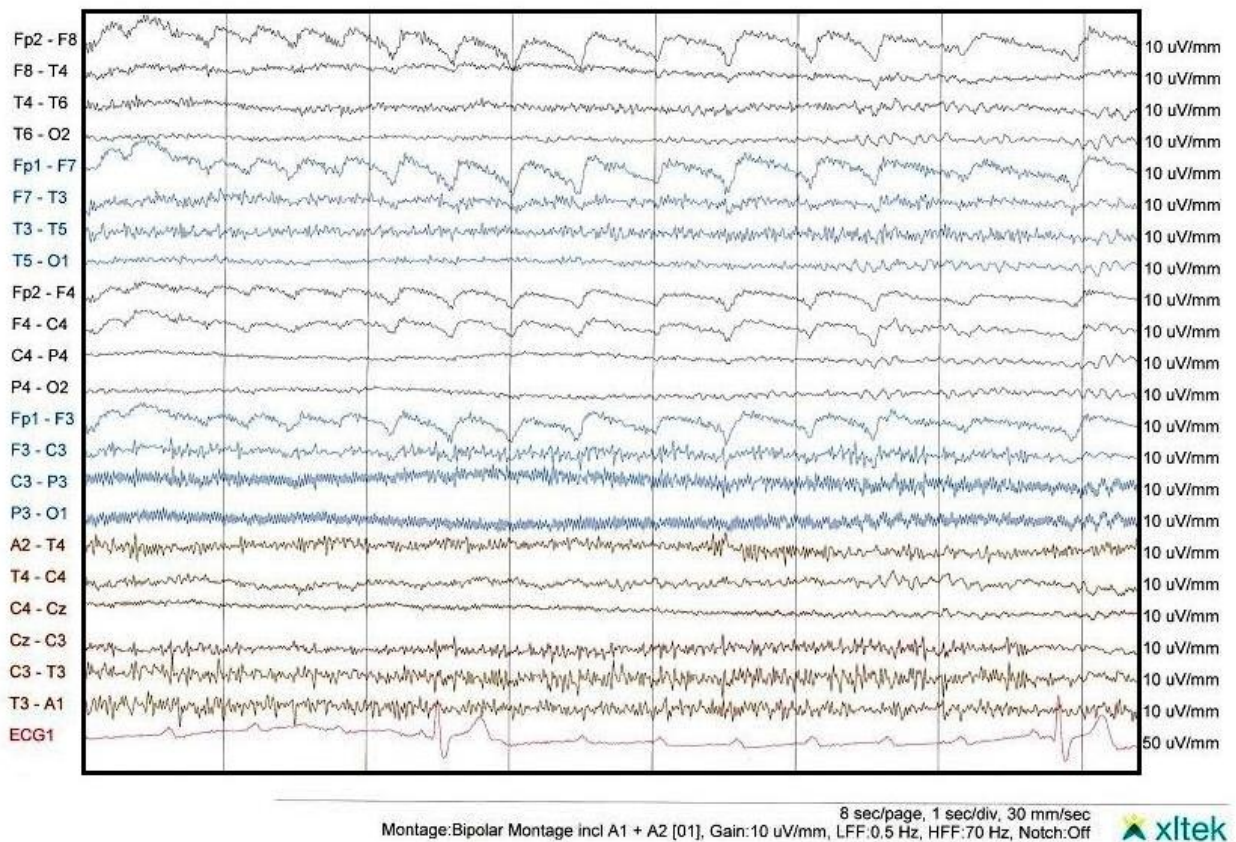
Case Presentation

A 65 year old female presented with multiple episodes of transient loss of consciousness over the preceding 48 hours. Episodes typically involved a short prodrome of light headedness, greying of the vision and abnormal facial sensation bilaterally prior to transient loss of consciousness. Episodes had occurred both whilst sitting and standing with rapid neurological recovery on each occasion. Bystanders had described bilateral upper limb shaking during a witnessed episode whilst the patient described an ongoing feeling of unease lasting for up to an hour after episodes. No tongue biting or incontinence had been observed. The patient also complained of frequent episodes of transient symptoms compatible with her typical prodrome, but without an associated loss of consciousness.

On clinical examination no cardiac or neurological abnormality was identified. Blood pressure was 140/80 (mmHg) with no orthostatic fall. Electrocardiogram (ECG) showed sinus rhythm with a normal PR interval and broadened QRS complexes (left bundle branch block pattern). Admission blood tests, chest radiograph and a computed tomography scan of the brain were unremarkable. An echocardiogram revealed normal biventricular systolic function.

An in-patient ambulatory electroencephalogram (EEG) was performed to look for epileptiform activity during symptom episodes which had become increasingly frequent since admission to the ward. The EEG was successful in capturing a typical symptom episode and is displayed as Figure 1.

Figure 1: An EEG at the time of patient symptoms



The EEG traces are unremarkable with no focal or diagnostic epileptiform abnormalities noted. Fortuitously a single ECG lead is also recorded during the EEG. This reveals a period of high grade atrio-ventricular block resulting in significant bradycardia occurring at the time of her symptoms. A diagnosis of intermittent heart block, a class 1 indication for permanent pacing, was therefore made and a dual chamber pacemaker inserted with resolution of symptoms.¹

Discussion

Differentiating intermittent cardiac dysrhythmia from seizure activity can be challenging. The presence of bundle branch block on the patient's ECG should perhaps have suggested the underlying cardiac cause for her symptoms. Although interestingly in the patient group with syncope and bundle branch block, but without severe left ventricular impairment, only half will actually require pacing.²

The further investigation which yielded the correct diagnosis in this case was an EEG, which is unusual, given that the cause of syncope was cardiac in nature.

References:

- 1) Brignole M, Auricchio A, Baron-Esquivias G, et al. 2013 ESC guidelines on cardiac pacing and cardiac resynchronisation therapy: the task force on cardiac pacing and resynchronisation therapy of the European Society of Cardiology (ESC). Developed in collaboration with the European Heart Rhythm Association (EHRA). *Europace* 2013; 15:1070-1118
- 2) Moya A, Garcia-Civera R, Croci F, et al. Diagnosis management, and outcomes of patients with syncope and bundle branch block. *Eur Heart J* 2011; 32:1535-1541.