Tilt Table Test in the Differential Diagnosis of Refractory "Epilepsy"

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Epilepsy is one of the most frequent causes of neurological disorders in young adults. We report the case of a patient who lived with the diagnosis of refractory epilepsy for twelve years, when actually the cause of the symptoms could be found with the performance of a tilt table test. Cardiologists should be aware of the possible diagnosis of neurocardiogenic syncope in patients previously diagnosed with epilepsy, especially in those with difficult therapeutic control.

Epilepsy is a term that encompasses a group of chronic conditions whose main clinical manifestation is the occurrence of epileptic seizures – sudden episodes, generally spontaneous, of alteration of consciousness and involuntary movements[1]. Epilepsy is one of the most frequent causes of neurological disorders in young adults, affecting approximately fifty million people worldwide[2,3]. The prevalence of epilepsy in Europe ranges from 4.5 to seven cases per 1,000 inhabitants, depending on the age range considered. Three hundred and eleven thousand new cases are diagnosed per year[4]. The knowledge, on the part of physicians, of the high prevalence of epilepsy especially among children may cause this diagnosis to be made without considering the possibility of other differential diagnosis.

We report the case of a patient who lived with the diagnosis of refractory epilepsy for twelve years, when actually the cause of the symptoms could be found with the performance of a tilt table test.

Case Report

Twenty-year-old female patient with history of five episodes of transient loss of postural tonus without loss of consciousness (she reported preserved hearing during these episodes) since the age of eight years. All presyncopal episodes were preceded by an ill-defined malaise, tiredness, blurred vision, hot sensation and visualization of scintillating scotomas. The patient reported that in none of the episodes she presented urinary and/or fecal incontinence, muscle jerks, tongue bite or other signs that could be interpreted as a grand mal seizure. Additionally, there were no further symptoms that could indicate postictal confusion state.

Neurologic assessment after the first episode concluded that the patient had absence epilepsy (petit mal epilepsy), despite a normal electroencephalogram, and she was prescribed carbamazepine. Despite the regular use of the medication for twelve years and maintenance of therapeutic serum levels of the drug, the patient presented four similar episodes since the treatment was started. Two of them occurred in the orthostatic position, and two in the sitting position. No precipitating factors such as heat, prolonged standing position, emotional stress, sight of blood, or others could be identified.

Additionally, the patient referred several episodes in which she felt all prodromes previously reported, albeit without progression to presyncope, and with improvement after assuming the supine position.

Due to the diagnosis of refractory epilepsy, the patient underwent a new clinical investigation. No alterations were observed in her physical examination. Total blood count, biochemical determinations, electrocardiogram, 24-hour Holter, and electroencephalogram were performed, showing no alterations.

Investigation continued with a tilt table test, which was performed in a silent environment, at a temperature of 26°C and a 54% relative humidity of air, with continuous electrocardiographic monitoring (ECG 98™, HW, Brazil), and intermittent blood pressure (BP) monitoring with a digital sphygmomanometer (Vital Lite™, Indumed, Brazil). After ten minutes in the supine position, the patient was passively put in the orthostatic position at 70°, which was kept for twenty minutes. Next, 400 mcg sublingual glyceryl-trinitrate (Nitrolingual Pumpspray™, G. Pohl-Boskamp GmbH & Co, Germany) were administered. At the 40th minute in the standing position the patient started complaining about an ill-defined malaise, tiredness, blurred vision, hot sensation and visualization of scintillating scotomas. Symptoms became more intense, with paleness and presyncope. She improved after reassuming the supine position.

The complete reproduction of the symptoms that led to the investigation, in association with the sudden drop in BP levels (systolic BP reduction = 40 mmHg, and diastolic BP reduction = 40 mmHg, minimum BP = 77 x 32 mmHg) and in the heart rate (minimum HR = 63 bpm) enabled the diagnosis of neurocardiogenic presyncope of the mixed type in response to the tilt table test (Figure 1). This pattern of response to the tilt table test is characterized by a sudden drop in BP and HR values, provided the lowest HR value is lower than 90% of the

Key words

Syncope, Epilepy, tilt teste, differential diagnosis, confusion state.

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maximum value achieved in the test (in this case, maximum HR = 107 bpm; 90% of the maximum HR = 96 bpm), and greater than 40 bpm.

After the test, carbamazepine was discontinued and the patient started treatment with fludrocortisone, and was given orientation as regards behavioral measures to be taken for the prevention of the episodes, such as the use of high compression stockings, aerobic training, and increased water and salt intake[5].

Discussion

Syncope is a frequent symptom, and is the cause of 3% to 5% of the emergency consultations, and 1% to 3% of hospital stays[6,7]. Its prevalence varies according to the age range studied, ranging from 15% among children younger than eighteen years of age[8] to 23% among elderly older than 70 years of age[9].

The higher prevalence of syncope among adult populations and the high incidence of epilepsy among children frequently induce the acceptance of the diagnosis of epilepsy in children with neurological symptoms (loss of consciousness), without proceeding with a deeper investigation.

Additionally, the diagnosis of petit mal epilepsy is frequently clinical. Although a typical electroencephalographic pattern of this type of epilepsy exists, the absence of electroencephalographic alterations in a patient with a strong clinical suspicion does not exclude this diagnosis[10]. Electroencephalographic alterations may occasionally be recorded, but only during the brief moments of loss of consciousness.

The present case had findings such as the prodromes described, rapid recovery, and absence of postictal confusion, which suggested the diagnostic possibility of neurocardiogenic syncope. However, although these findings help differentiate it from the classical grand mal epilepsy, they have a lower value in the diagnosis of petit mal epilepsy, because the latter is generally not followed by a postictal confusion state.

We should point out that the presence of muscle jerks does not exclude the diagnosis of syncope. Patients with cardioinhibitory neurocardiogenic syncope may present prolonged periods of asystole, with significant damage to cerebral perfusion[11]. In these cases, patients may present asymmetric or generalized tonic or tonic-clonic movements. These "seizures" usually disappear after the patient is placed in positions that facilitate cerebral perfusion (supine position or Trendelemburg position). Although these movements are very similar to the seizures that are characteristic of epilepsy, the latter can be differentiated by the presence of a postictal confusion state[12].

The presence of movements similar to seizures seems to be more frequent among children. Fernandez Sanmartin et al[13] published a case series in which 11.6% of the 216 patients with age between five and eighteen years had "seizures" during a tilt table test positive for neurocardiogenic syncope.

Cases in which neurocardiogenic syncope is interpreted as epilepsy have become more common with the wider use of the tilt table test. In the year 2000, Zaidi et al[14] evaluated 74 patients with diagnosis of refractory epilepsy. Forty one per cent of these patients had a positive tilt table test. A great part of these patients were diagnosed with neurocardiogenic syncope and not with epilepsy.

Conclusion

Epidemiologic data such as the prevalence of diseases should be used to guide the clinical investigation on three bases: history taking, physical examination, and

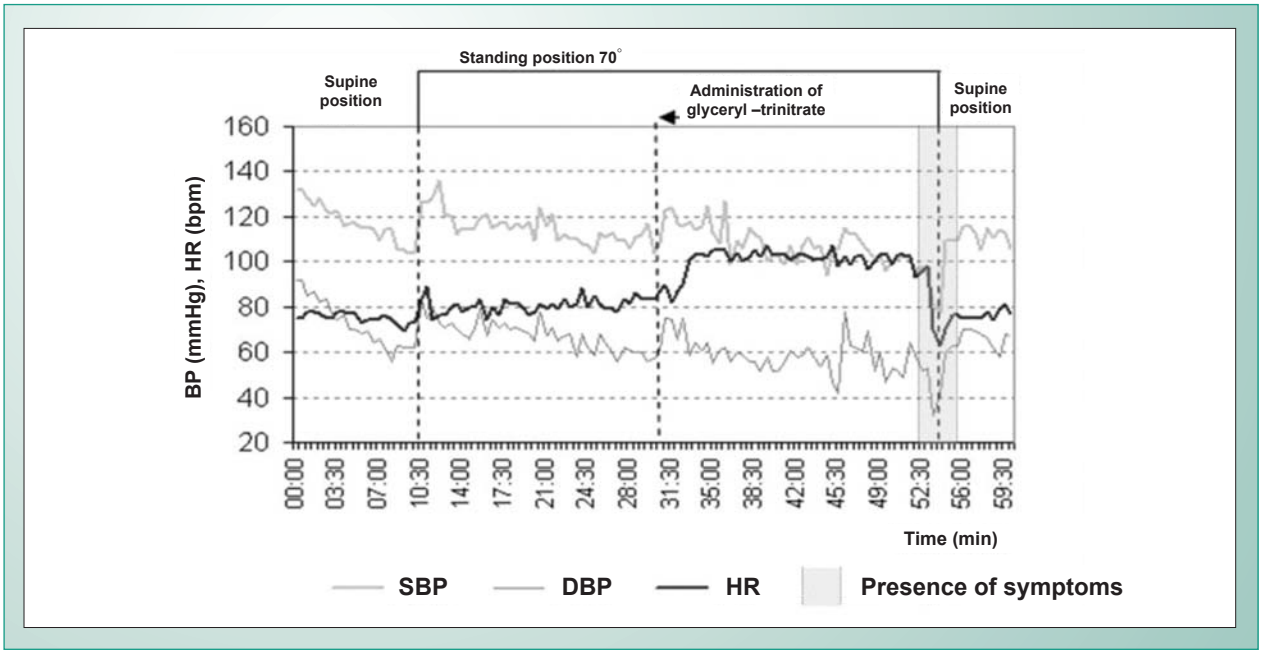

Fig. 1 - Patient's tilt table test. SBP = systolic blood pressure; DBP = diastolic blood pressure; HR = heart rate.

laboratory tests. Cardiologists should be aware of the possible diagnosis of neurocardiogenic syncope in patients previously diagnosed with epilepsy, mainly in those with difficult therapeutic control. The tilt table test is a simple, non-invasive tool that may be useful to identify differential diagnoses in these cases.

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