Mobitz type II, 2:1 atrioventricular block mimicking as a convulsive seizure

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Introduction

Convulsive seizures are frequently encountered in daily practice. However, in some clinical situations, the underlying problem is not related to epilepsy and can be confused with other pathologies; one of such conditions is atrioventricular (AV) blocks. In Video Electroencephalographic monitorization (VEM), which is one of the tests used to investigate convulsive attacks, electrocardiography (ECG) recordings are taken simultaneously and blocks can be detected in rare cases. In this article, we present an example of such clinical picture.

Case Report

A 48-year-old female patient with a history of asthma was admitted to our neurology department with shivering all over the body and feeling faint. The patient did not give any history of cardiac disease or any drug intake except asthma medication. Physical examination findings were as follows: blood pressure, 125/75 mm Hg; pulse rate, 85 bpm; oxygen saturation, 96%; and respiratory rate, 22/min; no pathological findings were detected on cardiovascular and neurological system examination at first evaluation. ECG showed normal sinus rhythm without ischemic ST/T changes and abnormal PR and QT intervals (Fig. 1). Laboratory tests showed normal values for complete blood count, cardiac biomarkers, electrolytes, and thyroid function tests. Cranial computed tomography and magnetic resonance imaging studies were performed; both of them revealed normal intracranial findings. Furthermore, normal cerebral function was detected on VEM. During VEM, Mobitz type II, 2:1 AV block, which persisted for 45 s, was observed incidentally (block rate, 32 bpm) (Fig. 2). She stated that during this 45-s period, she had shivering all over the body and was feeling faint. This clinical condition was observed by nurses. Because of the short duration, the patient's clinical condition and ECG findings returned to normal spontaneously without any medication. After consultation between the departments of neurology and cardiology, patient's symptoms were considered to have appeared secondary to a cardiac conduction abnormality, not epileptic seizures. Transthoracic echocardiography and coronary angiography were performed, revealing normal echocardiographic findings and normal coronary arteries. Because of the unexplained high-degree AV block, a permanent pacemaker was implanted to the patient.

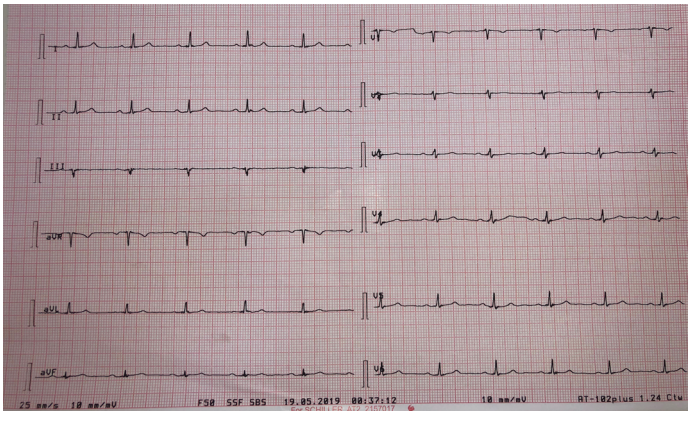

Figure 1. Electrocardiography image showing normal sinus rhythm

Figure 2. Simultaneous electroencephalogram and electrocardiogram recordings of the patient showing Mobitz type II, 2:1 AV block

Discussion

VEM is used to identify convulsive seizures using a longer electroencephalography (EEG) recording and synchronized video images compared with a standard EEG. VEM serves many purposes; these include examining seizures and concurrent EEGs, classifying epileptic seizures, revealing non-epileptic seizures, and detecting seizures areas (1). ECG electrodes are mostly used in EEG. The use of ECG electrodes allows the identification of pulse artifacts and the detection of arrhythmias that may occur in patients. Cardiac arrhythmias are not uncommon in patients with suspected epilepsy. These arrhythmias can be interictal or peri-ictal (2). A study has

suggested that 25% of the cases that are thought to be epileptic seizures are actually attacks due to cardiac events (3). In some conditions such as cardiogenic syncope, although no changes are observed on EEG during the attack, detection of arrhythmias on ECG recording may change the diagnosis and treatment of the patient. Therefore, a detailed cardiovascular examination should be performed and ECG recordings should be carefully analyzed during VEM before confirming the diagnosis of epilepsy.

Conclusion

Some of the heart diseases, especially bradyarrhythmias, can present symptoms similar to epilepsy. We draw attention to a Mobitz type II, 2:1 AV block, which was recorded concurrently and coincidentally in a patient who presented with a pre-diagnosis of epilepsy.

Informed consent: Written informed consent was obtained from the patient for the publication.

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Unusual complication of carotid artery stenting as the result of a proximal emboli protection device (the Mo.Ma): Iatrogenic common carotid artery dissection

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Introduction

The safety and efficacy of carotid artery stenting (CAS) with the use of emboli protection devices (EPDs) have been demonstrated in the treatment of atherosclerotic carotid artery disease (CAD) (1). CAS has even recently become more popular than carotid endarterectomy (CEA) in the treatment of CAD thanks to newly developed techniques, including open or closed cell stents and protection devices, as well as special wires and catheters (1-3). Cerebral EPDs reduce the incidence of peri-procedural embolic events in patients undergoing CAS (4). Several EPDs have been designed and marketed so far. Distal emboli protection (filter) devices (d-EPD) and proximal emboli protection devices (p-EPD) are the two most frequently used EPDs systems (5). The Mo.Ma device (Medtronic Inc., Santa Rosa, CA, USA), which was approved by the Food and Drug Administration in 2009, is a p-EPD commonly used in high-risk patients for the protection from cerebrovascular embolic events (6). Although the Mo.Ma device was substantially successful, it may lead to some complications, including arterial vasospasm and arterial dissection during the inflation of the proximal and distal balloon (6). Here we present a serious common carotid artery dissection as a result of using the Mo.Ma device during CAS.

Case Report

A 60-year-old man with a history of CAD, hypertension, and smoking, and a transient ischemic attack with left hemiparesis 2 weeks before was referred to our clinic for CAS. His blood pressure was 120/70 mmHg, and the pulse rate was 85 bpm. A neurological examination did not show any significant findings, except a murmur on the right carotid artery. Other systemic examinations were also normal. The electrocardiogram showed a normal sinus rhythm. Computed tomography (CT) demonstrated a 95% stenosis in the right internal carotid artery (RICA) (Fig. 1a). After an informed consent form was obtained, the patient was transferred to the angiography unit for CAS. Diagnostic angiography showed a severe stenosis in RICA, which was defined as 95% stenosis according to the North American Symptomatic Carotid Endarterectomy Trial classification (Fig. 1b). The rest of extracranial cerebral arteries were normal. In addition, there was no baseline carotid dissection in axial CT imaging (Fig. 2).

CAS was planned for the patient in index procedure. After 5000 units of heparin was given intravenously, the right common carotid artery was cannulated with a 5F Simmons catheter via the transfemoral approach. The external carotid artery (ECA) was wired with a 0.035" hydrophilic wire, and the 5F Simmons catheter was advanced in there. The hydrophilic wire was exchanged with super stiff wire. After the Mo.Ma device was prepared, it was positioned in the right ECA and CCA behind the lesion, aiming to close all side branches in ECA. After the ECA