# 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.

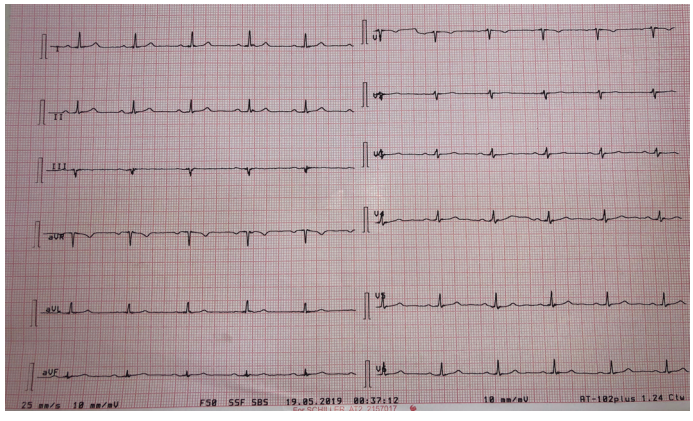


**Figure 1.** Electrocardiography image showing normal sinus rhythm



**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.

## References

1. Morkavuk G, Koç G, Gökoğlan Y, Kabul HK, Leventoğlu A, Gökçil Z. Atrioventricular Block in a Patient Followed Up with a Diagnosis of Epilepsy. Turk J Neurol 2018; 24: 96-7.
2. Rugg-Gunn FJ, Simister RJ, Squirrell M, Holdright DR, Duncan JS. Cardiac arrhythmias in focal epilepsy: a prospective long-term study. Lancet 2004; 364: 2212-9.
3. Zaidi A, Clough P, Cooper P, Scheepers B, Fitzpatrick AP. Misdiagnosis of epilepsy: many seizure-like attacks have a cardiovascular cause. J Am Coll Cardiol 2000; 36: 181-4.

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*DOI:10.14744/AnatolJCardiol.2019.88646*