CASE REPORT

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Attention! One of the Causes of Second Degree Mobitz Type 1 AV Block: Pheniramine Maleate

ABSTRACT
Atrioventricular (AV) blockade is the loss of function of the pathways that provide electrical conduction between the sinoatrial (SA) node and the atrioventricular (AV) node. It is rated according to the level of distortion in the transmission.
Myocarditis, inferior myocardial infarction (MI), previous heart operation, and treatment with drugs such as beta-blockers, calcium channel blockers, digoxin, and amiodarone can cause AV blockade.
A patient was referred to the emergency department with swelling of her lips, itching, and rash. There were widespread urticarial rashes on her body. Pheniramine maleate was administered intramuscularly. Ten minutes later, the patient developed bradycardia and hypotension. A 2nd-degree Mobitz type 1 block was detected on the ECG.
Pheniramine maleate is a first-generation, stable, potent sedative and antihistamine from the alkylamine group. It should be kept in mind that pheniramine maleate may cause AV blocks.

Keywords: Arrhythmia, Pheniramin Maleat, Antihistamine

Dikkat! İkinci Derece Mobitz Tip 1 AV Blok Nedenlerinden Biri: Feniramin Maleat

ÖZET
Atrioventriküler (AV) blok, sinoatriyal (SA) düğüm ile atriyoventriküler (AV) düğüm arasındaki elektriksel iletimi sağlayan yolların işlev kaybıdır. İletimdeki bozulma seviyesine göre derecelendirilir.
Miyokardit, inferior miyokard enfarktüsü (MI), geçirilmiş kalp operasyonu, beta-blokörler, kalsiyum kanal blokörleri, digoksin ve amiodaron gibi ilaçlarla tedavi AV bloğuna neden olabilir.
Bu çalışmamızda dudaklarında şişme, kaşıntı ve döküntü şikayetleri ile acil servise getirilen olguyu sunduk. Hastanın vücudunda yaygın ürtikeryal döküntüler vardı. Feniramin maleat intramüsküler olarak uygulanan olguda 10 dakika sonra bradikardi ve hipotansiyon gelişti. Çekilen EKG'de ikinci derece Mobitz tip 1 blok tespit edildi.
Feniramin maleat, alkilamin grubundan birinci nesil, stabil, güçlü bir sedatif ve antihistaminiktir. Bu çalışma ile Feniramin maleatın AV bloklara neden olabileceği konusunda farkındalık oluşturmayı ve literature katkı yapmayı amaçladık

Anahtar Kelimeler: Aritmi, Feniramin Maleat, Antihistamin.

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INTRODUCTION

Atrioventricular blocks (AV blocks) are the loss of function of the cardiac electroconductive pathways connecting the sinoatrial node (SA node) and the atrioventricular node (AV node) (1). Depending on the degree and type of conduction block, AV blocks may decrease cardiac output secondary to losing coordination of the atriums and ventricles. Hemodynamic instability may start suddenly and unexpectedly, causing syncope (Stokes–Adams attack) or sudden cardiac death (2). Rhythm problems are less common in the pediatric population than in adults. However, the increase in diagnostic possibilities, the success rate of surgical interventions for congenital heart diseases, and the successes achieved in other treatments have caused pediatric AV blocks to be encountered more frequently (3).

Pheniramine maleate is a first-generation, stable, potent sedative, alkylamine group antihistamine. It binds to H1 receptors reversibly and is a competitive antagonist. It is widely distributed throughout the body, including the central nervous system. It treats urticaria, allergic rhinitis, angioedema, conjunctivitis, and itchy skin disorders (4).

We wanted to contribute to the literature by reporting a patient who was referred to the emergency department due to urticaria and developed a 2nd-degree Mobitz type 1 cardiac block after pheniramine maleate treatment.

Case Report

A 16-year-old female patient was referred to the emergency department with swelling of her lips, itching, and a rash that developed suddenly on her body and spread rapidly. The patient did not have shortness of breath, cough, or difficulty swallowing, did not have a history of drug use or allergies, and did not have a known disease in the family. On physical examination, the patient's fever was 36.7°C, pulse was 65/min, blood pressure was 100/70 mmHg, and femoral pulses were palpable. There were widespread urticarial rashes on her body, puffy from the skin, pale in the middle, and reddened around, with pronounced borders. Uvular edema was not detected. Her respiratory sounds were normal, her cardiac rhythm was regular on heart examination, and there was no murmur. Other system examinations were normal. Blood and urinalysis were performed. Pheniramine maleate was administered intramuscularly.

Ten minutes after the treatment, her rash began to fade, and the swelling on her lip began to regress; however, at that time, she developed weakness, dizziness, and blackout. The patient's heart rate was 47/min, and her blood pressure was 80/40 mmHg. A 2nd-degree Mobitz type 1 block was detected on the ECG (Figure 1). The patient was placed in the Trendelenburg position. 20 ml/kg of isotonic fluid was administered intravenously in 15 minutes. The patient's plasma electrolyte levels were normal. After 1 hour of follow-up, his complaints regressed. On the control ECG, cardiac pulses were in sinus rhythm and regular, and the heart rate was 55/min (Figure 2). The echocardiographic examination was normal. During the 24-hour Holter examination, the rhythm was sinus, with a minimum heart rate of 47/min, a maximum heart rate of 141/min, and a total of 4 VEs and 60 SVEs. No block was detected.

Informed consent was obtained from the parents before this article was written.

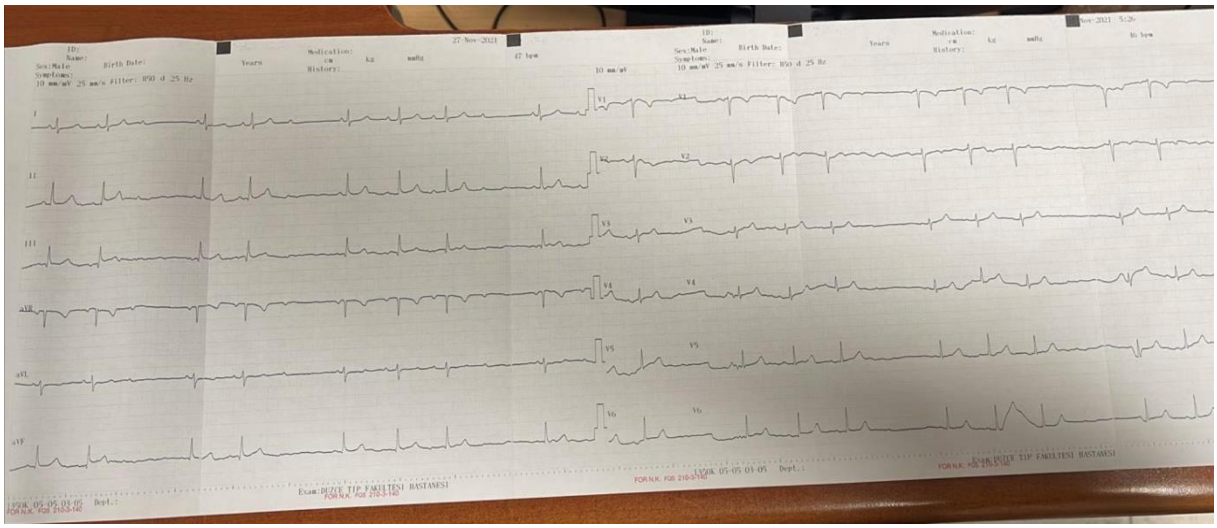

Figure 1. Second-degree Mobitz type 1 block observed on the patient's ECG during the symptomatic period

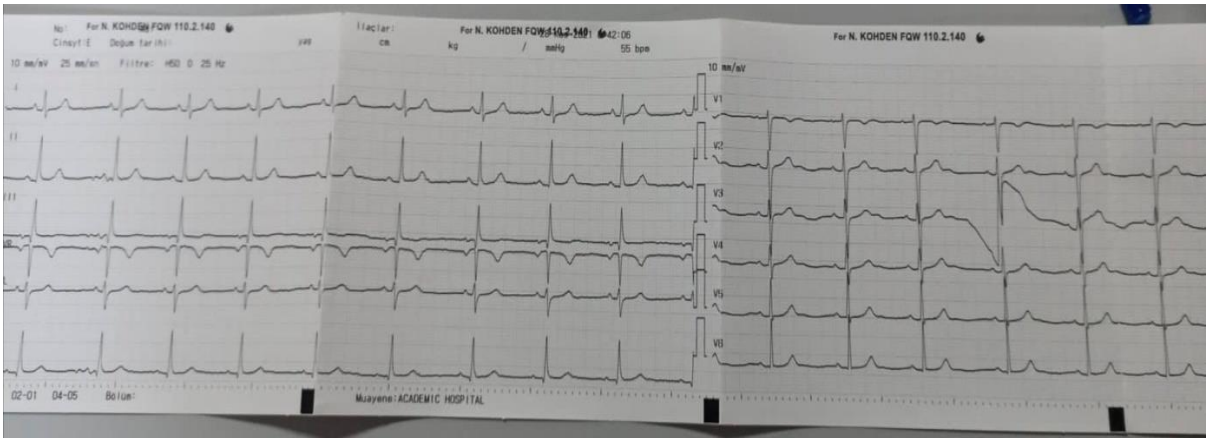

Figure 2. Control ECG, sinus rhythm, and block were not observed

DISCUSSION

The atrioventricular block is the inability to transmit electrical impulses from the atrium to the ventricles healthily. The AV blocks are divided into 3 types: first-degree (1°), second-degree (2°), and third-degree (3°). First-degree AV block is characterized by prolonged AV conduction and prolonging the P-R interval on ECG (5). A second-degree Mobitz type 1 block (Wenckebach) involves slowing AV conduction, resulting in prolonged PR interval and a nontransmitted P wave. Second-degree Mobitz type 2 AV blocks were defined as P waves that were not conducted at regular intervals without prolongation of the PR interval. This is important because of the risk of returning to a third-degree block over time (2).

Second-degree Mobitz type 1 block is observed in healthy individuals during sleep or in young athletes with increased vagal tone. Although it is generally considered a benign condition, a study conducted in Denmark reported that 43% of patients with a 2nd-degree Mobitz type 1 AV block required a pacemaker within 1 year with a higher degree of AV block. A significant relationship was also reported between 2nd-degree Mobitz type 1 AV block and cardiovascular death (6). Drugs such as beta-blockers, calcium channel blockers, digoxin and amiodarone, inferior MI, and myocarditis can cause second-degree Mobitz type 1 block. It can also be observed following cardiac operations (mitral valve repair, tetralogy of Fallot repair) (7,8). If there was no history of congenital heart disease, surgery, or symptoms of heart failure, follow-up was sufficient.

Drugs such as beta-blockers, calcium channel blockers, digoxin, and amiodarone can cause second-degree Mobitz type 1 block, but such transmission problems have not been reported thus far with pheniramine maleate, an antihistamine we used to treat urticaria in our patient.

Pheniramine maleate: This compound is a first-generation, stable, potent sedative antihistamine in the alkylamine group. It binds to H1 receptors reversibly and is a competitive antagonist. It is widely distributed throughout the body, including the central nervous system. It treats urticaria, allergic rhinitis, angioedema, conjunctivitis, and itchy skin disorders (4). The cardiac side effects of pheniramine maleate are tachycardia and arrhythmia. In a study of Levi's animal model, it was reported that antihistamines, including pheniramine maleate, have an antagonistic effect on the negative dromotropic effect of histamine and even have an antiarrhythmic effect by increasing the threshold of the histamine-dependent AV block of the AV node (9). However, a 2nd-degree Mobitz type 1 block developed after antihistamine treatment in our patient.

In this article, we aimed to raise awareness about the side effects of pheniramine maleate and contribute to the literature by presenting a patient who was referred to the emergency department due to urticaria and developed a second-degree Mobitz Type 1 block after pheniramine maleate treatment. To the best of our knowledge, no cases of second-degree Mobitz type 2 block after pheniramine treatment have been reported in the literature.

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