# A Dysrhythmia Rarely Seen in Acute Rheumatic Fever: Mobitz Type 1 2nd-Degree AV Block

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## Özet

Akut romatizmal ateşin (ARA) en önemli bulgusu karditтir. ARA'da akut dönemde birçok ritim bozukluğu görülebir. Mekanizma tam olarak bilinmese de toksemiye bağlı vagal tonus artışının en sık neden olduğu düşünülmektedir. ARA'da görülen kalp blokları antienflamatuar tedaviye iyi yanıt verir. Nadiren geçici veya kalıcı pacemaker ihtiyacı olur. Akut romatizmal ateşin sık görüldüğü ülkelerde, AV blok olan hastalarda ARA'nın düşünülmesi gerektiği vurgulanmaktadır. Bu nedenle ülkemiz koşullarında açıklanamayan EKG anormallikleri varlığında kapak tutulumu saptanmasa bile ARA akılda tutulmalıdır.

***Anahtar kelimeler:*** *Akut romatizmal ateş, Mobitz tip 1 AV blok*

## Abstract

The most important finding of acute rheumatic fever (ARF) is carditis. Several dysrhythmias may develop during acute phase of ARF. Although the exact mechanism is unknown, increased vagal tonus due to toxemia is thought to be the most common cause. Cardiac blocks seen in ARF respond well to anti-inflammatory treatment. It rarely requires a transient or permanent pacemaker. It has been highlighted that ARF should be suspected in patients with an AV block in countries where acute rheumatic fever is common. Thus, ARA should be considered in presence of unexplained ECG abnormalities, even if there is no valvular involvement, in our country.

***Keywords:*** *Acute rheumatic fever, Mobitz type 1 AV block*

## Introduction

Acute rheumatic fever is a nonsuppurative inflammatory connective tissue disease that occurs following a throat infection caused by Group A beta-hemolytic streptococci (1). The most important major finding of the disease is carditis. Rheumatic cardiac disease, which is a complication of carditis, is an important public health issue in developing countries (2). Carditis seen in acute rheumatic fever is pancarditis. In association with pancarditis, conduction pathways may be affected (3). First-degree antrioventricular block is among minor modified Jones criteria. However, an association between several dysrhythmias and ARF has been demonstrated in the literature (4). In this manuscript, a case in which there was a complete regression of 2nd-degree AV block after steroid treatment in a patient diagnosed with ARF is reported.

## Case Report

Acute phase reactants were determined to be elevated in work-ups requested from orthopedics outpatient clinic of our hospital where he admitted due to joint swelling and pain firstly in left ankle, followed by left and right knees that began five days ago. After septic arthritis was

discarded, the patient was referred to pediatric cardiology outpatient clinic as he mentioned about having had a throat infection about ten days ago.

The 15 year-old patient who was evaluated in pediatric cardiology outpatient clinic, who was conscious and whose general condition was fine and vital signs were stable had arrhythmic heart sounds, with a 1-2/6 systolic murmur on cardiac apex. Circumference of the right knee was 0.5 cm larger than the left one and there was increased heat on the right knee. On the electrocardiogram (ECG), Mobitz type 1 2$^{nd}$-degree AV block with a ventricular rate of 79/min was detected (figure 1). On echocardiographic examination, there were mild mitral regurgitation and 1$^{st}$-degree aortic regurgitation. Left ventricular systolic functions were normal. In the laboratory work-up white blood cell count (12.200/mm3), acute phase reactants (erythrocyte sedimentation rate 72 mm/hour), C-reactive protein 206,39 mg/L) and anti-streptolysin-O titer (420 IU/mL) were determined to be high.

Acute rhematic fever and carditis were considered and the patient was hospitalized. Cardiac monitorization and absolute bed rest were recommended. Benzathine penicillin G (1,200,000 İU, intramuscular) was administered and prophylactic administration at every 21 days was recommended. After other etiologies of arthritis were discarded, steroid (prednisolone) treatment was initiated. Daily ECG monitoring was performed. By the second day of the treatment articular complaints regressed; at the third day the AV block was resolved and sinus rhythm was begun to be observed. Five days after initiation of steroid treatment, there was a regression of acute phase reactants in control blood tests. After prednisolon was administered at a full-dose for 2 weeks, the steroid treatment was gradually reduced and then discontinued; at the final week of reduction, acetylsalicylic acid was added to the treatment. The overall treatment was completed in 8 weeks and then discontinued. In the holter examination performed before discharge no ectopic beats, pauses or blocks were observed. In the control visit after 6 months, ECG was on sinus rhythm and there was no significant change in valvular regurgitations.

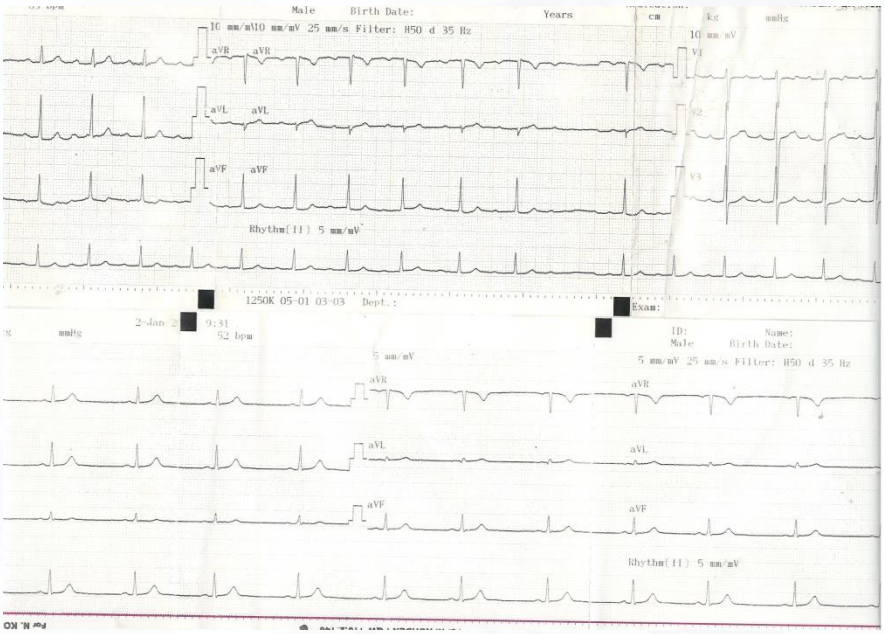


**Figure 1. Electrocardiographic examination of the patient at the time of diagnosis and at 3$^{rd}$ day of steroid treatment**

**Discussion**

Apart from first-degree AV block; electrocardiographic abnormalities including second-degree AV block, AV complete block, bundle blocks, sinus tachycardia, atrial or ventricular premature beats, accelerated nodal rhythm, supraventricular tachycardia, junctional and ventricular tachycardia, prolonged QT duration and "torsades de pointes" can also be seen in acute phase of ARF (5). Although the exact mechanism is unknown, increased vagal tonus due to toxemia is thought to be the most common cause (6). It has also been suggested that a myocardial inflammation involving the AV node or a vasculitis involving the AV nodal artery can also cause development of conductional abnormalities (7).

Heart blocks seen in ARF tend to be self-limiting, they do not become chronic and respond well to anti-inflammatory treatment (5, 7). Although advanced-degree AV block is a finding of cardiac involvement, it is not associated with vasculities. Furthermore, it does not have a prognostic significance (8). Rarely a transient pacemaker is required in patients with syncope or those who are hemodynamically instable; there are reported cases for which a permanent pacemaker was placed in the literature, although rare (9). In our patient who we were found to have 2$^{nd}$-degree type 1 AV block on ECG, normal sinus rhythm was observed by the third day of steroid treatment and no additional treatment was required for AV block.

It has been highlighted that ARF should be considered in differential diagnoses of patients with first-degree or Mobitz type 1 AV block in countries where acute rhematic fever is common, even in absence of evidence of arthritis or carditis (5). Although there is no definite data regarding incidence of the disease in our country, it is thought to have similar incidence with that of Middle Eastern and Mediterranean countries (25-100/100,000) (10). In our country, in a study conducted in Konya, 3.4% of the patients admitted to department of pediatric cardiology were diagnosed with ARF (11). Thus, ARA should be considered in presence of unexplained ECG abnormalities, even if there is no valvular involvement, in our country.

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