A Rare Heart Rhythm Problem in Acute Rheumatic Fever: Complete Atrioventricular Block

Akut Romatizmal Ateşte Eşlik Eden Ender Bir Kardiyak Ritim Bozukluğu: AV Tam Blok

Romatizmal Kardit ve Tam Kalp Bloğu / Rheumatic Carditis and Complete Heart Block

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Özet

Romatizmal kalp hastalığı çocuklarda ve genç erişkinlerde kazanılmış kalp hastalığının en önemli nedenidir. Akut Romatizmal Ateş (ARA) seyrinde farklı türlerde ritim ve ileti bozuklukları görülebilmektedir. Uzun PR aralığı ARA'da yaygın olarak görülürken tam kalp bloğu ise son derece nadir bir bulgudur. Bu makalede gezici artrarji ve hafif kardit nedeniyle ARA tanısı alan ve başvuruda tam kalp bloğu saptanan 14 yaşında kız hasta sunulmuştur. Antiinflamatuvar tedavi sonrası yatışının 3. günde 2. derece AV blok (Mobitz tip 1), 4. gününde uzun PR aralığı ile birlikte normal sinus ritmine dönüş izlendi. Romatizmal ateş seyrinde komplikasyon olarak nadiren tam kalp bloğu görünmekte ve genelde akut dönemle sınırlı seyretmektedir.

Anahtar Kelimeler

Romatizmal Ateş; Kardit; Atrioventriküler Blok; Ritim

Abstract

Rheumatic heart disease remains the most important cause of acquired heart disease in children and young adults. Different kinds of rhythm and conduction disturbances may be seen during the course of acute rheumatic fever (ARF). Long PR intervals are found commonly in rheumatic fever, but complete atrioventricular (AV) block is an exceptionally rare manifestation. This case report is about a 14 year-old-female patient diagnosed as ARF based on migratory arthralgia and mild carditis who also developed complete heart block on admission. Electrocardiogram on the 3rd day of hospitalization depicts 2nd degree atrioventricular block (Mobitz I) combined with PR prolongation. The ECG revealed a normal sinus rhythm with PR prolongation on the 4th day of hospitalization. Rarely, complete AV heart block can occur as a complication of ARF and may develop during the acute phase

Keywords

Rheumatic Fever; Carditis; Atrioventricular Block; Rhythm

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Introduction

Acute rheumatic fever (ARF) is a major health problem in many countries [1]. The pathogenesis of the disease remains an enigma and specific treatment is not available. Rheumatic fever is a multi systemic disease related to an immune reaction against group A, Beta Streptococcus infection [2-3]. It still remains an important cause of mortality and morbidity in our country.

Different kinds of rhythm and conduction disturbances may be seen during the course of ARF, one of the most frequently seen (10-75%) disorder being the first degree atrioventricular (AV) block [1,3]. However, complete heart block is an exceptionally rare manifestation of ARF [3]. These disturbances, mostly bradycardias, are seen independent of the valvular involvement and they are limited to the acute phase [2,4]. Specific treatment, such as insertion of a temporary pacemaker, should be considered only when syncope or clinical symptoms persist.

This case report is about a 14 year-old female patient diagnosed as ARF based on mild carditis and migratory arthralgia who also complete AV block admitted to our clinic.

Case Report

A 14-year –old girl was admitted in our hospital with migratory arthralgia of 3 days duration. She had a history of an upper respiratory infection about 1 month before the onset of symptoms. There was no history of intake of any drugs. There was no previous history of any joint pains.

The patient appeared ill. The body weight was 55 kg. The temperature was 36.5 oC, the blood pressure was 100/65 mm Hg and the heart rate 75 beat per min. The cardiac examination revealed arrhythmias and grade 2 pansystolic murmur, best heard at the apex. The findings from other examinations were normal. The first electrocardiografic recording revealed complete AV block with a ventricular rate of 72 beats/min (Figure 1) without

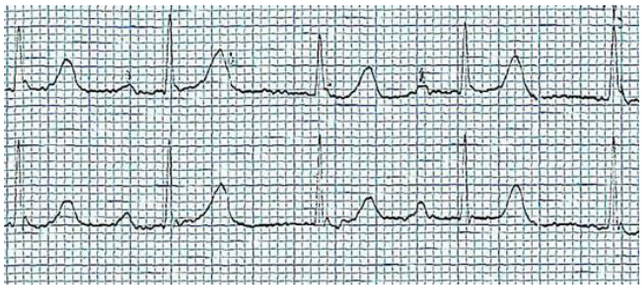


Figure 1. Electrocardiogram shows complete heart block with a ventricular rate of 72 on the day of admission.

clinical symptoms. An echocardiographic examination showed mild mitral regurgitation (pansystolic, velocity: 3.5 m/sec) in an otherwise structurally normal heart. The left ventricule ejection fraction was 65%. Telecardiography was normal. Laboratory studies showed the following values; white blood cell count 7180/ mm3, hemoglobin 11.5 g/dl, erythrocyte sedimentation rate 72 mm/hr (upper limit of normal=20mm/hr), C-reactive protein (CRP) level 2.8 mg/dl (upper limit of normal= 2 mg/dl), antistreptolysin O (ASO) titer 1260 IU/ml (normal <320 IU/ml). Routine biochemical investigations were normal.

The diagnosis of ARF was established according to the Jones criteria [1]. Our patient fulfilled one major and 2 minor Jones criteria. The presence of carditis, arthralgia, advanced AVB, elevated acute phase reactants, and high ASO titers. An intramuscular injection of benzathine penicillin was administered and prednisone (40mg/day) was also provided. On the 3rd day of hospitalization, a 24 hour Holter analysis revealed a second degree, Mobitz type 1 AVB. On the fourth day hospitalization, the electrocardiogram (ECG) revealed a normal sinus rhythm with a 1st degree atrioventricular block (Figure 2). Control acute phase reactants and ECG were also within normal ranges on the 7th day hospitalization.. After three weeks, salicylate (3 g/day) was also provided. After steroid and salicylate medication was discontinued, the ECG normalized with the monthly penicillin injections. An echocardiographic examination revealed mild mitral regurgitation in an otherwise structurally normal heart.

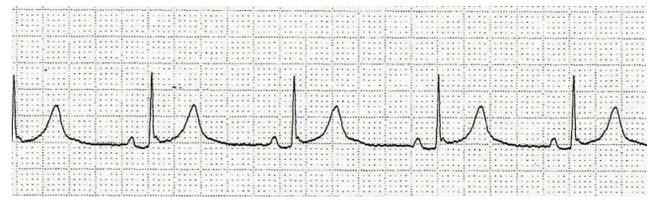


Figure 2. The ECG revealed a normal sinus rhythm with PR prolongation on the 4th day of hospitalization.

Discussion

Rheumatic heart disease remains the most important cause of acquired heart disease in children and young adults [1]. The diagnosis of RF is based on the Jones criteria [2]. Carditis is the most serious manifestation of the rheumatic fever, since it may cause polyarthritis, acute heart failure (pancarditis) or culminate in chronic valvular heart disease [2,4]. Our patient fulfilled one major and 2 minor Jones criteria and electrocardiography confirmed complete AV block. Our patient diagnosed as ARF was made the presence of carditis, migratory arthralgia, elevated acute phase reactants and high ASO titers , a history of upper respiratory tract infection.

In cases with ARF, electrocardiographic abnormalities such as sinus tachycardia, bundle branch block, nonspecific ST-T wave changes, atrial and ventricular premature complexes and accelerated junctional rhythm can also seen with variable frequency [4-5]. However, second degree and complete heart block is rarely manifestation of ARF [3-4]. Advanced AV block and Stokes-Adams attacks is not frequently described and may require pacing [6]. In our case, the ECG showed complete AV block admitted to our clinic (mean ventricular rate:72 beats/min), but AV block has no clinical symptoms.

The carditis of ARF is considered to be pancarditis including pericarditis, endocarditis and myocarditis. Inflammation may affect the conduction tissue and lead to complete AV block [6]. The cause of this advanced degree AVB is uncertain, but it may be attributed to increased vagal tone. Advanced degree AVB with acute rheumatic fever appears to be self-limited in most cases [3,6]. Endocardial inflammatory changes are responsible for valvulitis, and acute rheumatic valvulitis results in chordal elongation with prolapse of the leaflet coaptation and mitral regurgitation. So, valvulitis can lead to permanent valvular damage [2]. It is presumed that myocardial involvement, including the conduction pathway may be more prominent than endocarditis in our case.

Zalzstein et al [4] evaluated 65 children with ARF during period from 1994-2001 years. They showed first degree AVB in

72.3%, second degree AVB of Mobitz type 1 in 1.5% and the presence of complete AVB in 4.6% cases. The disturbances of conduction resolved in this children. Karacan et al [5] evaluated 24-hour electrocardiography of 64 children with ARF and determined mobitz type I block and atypical Wenckebach periodicity in one patient, accelerated junctional rhythm in nine patients, premature contractions in %29.7. Reddy et al [7] reported five cases described of ARF with evidence of second or third degree AVB, had range of about 2 to12 days. One patient required a temporary pacemaker and two patients were treated with corticosteroids. Other cases found prolonged PR intervals in 84% of 508 children with ARF, among these cases, 3 children had complete AV block, an done patient required artificial pacing [8]. Our patients advanced AV block reverted to first degree block with corticosteroid therapy after 3 days hospitalization and not to required pacemaker. 24-hour electrocardiography recording revealed episodes of 2nd degree atrioventricular block (Mobitz 1) combined with PR prolongation. Advanced block in rheumatic fever may appear to be temporary, and resolves with conventional anti-inflammatory treatment.

As a result, in our case illustrates the course of a patient who developed complete AV block and mild valve regurgitation. The heart block resolved over a period of days with anti-inflammatory treatment. Different kinds of rhythm and conduction disturbances may be seen during the course of acute rheumatic fever (ARF), but complete AV block is a very rare complication.

Competing interests

The authors declare that they have no competing interests.

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