

Transient Type 1 Second Degree AV Block in Acute Rheumatic Fever



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ABSTRACT

A 14 years male presented with fever and migratory polyarthritits. Investigations revealed second degree AV block of Mobitz type 1 on ECG, leucocytosis, normal ESR, ASO titer and echocardiography. ASO titer repeated on 4 th day of admission was high. A diagnosis of acute rheumatic fever was established by using World Health Organization criteria. The second degree Atrioventricular (AV) block reverted back to normal sinus rhythm on day nine. In developing nations where acute rheumatic fever remains endemic second degree AV block of Mobitz type 1 in teenagers should prompt to the diagnosis of acute rheumatic fever even if supporting evidence of streptococcal infection is absent initially.

Key words: Atrioventricular block, acute rheumatic fever, anti streptolysin o titer.

Akut Romatizmal Ateşte Geçici Tip 1 İkinci Derecede AV Blok

ÖZET

14 yaşında erkek hasta ateş ve gezici poliartritis ile başvurdu. Yapılan incelemeler sonrası ikinci derecede EKG'de Mobitz tip 1 AV blok, lökositoz, normal ESR, ASO ve ekokardiografi saptandı. ASO titresi 4.günde yükselmeye başladı. Akut romatizmal ateş tanısı WHO kriterleri kullanılarak konuldu. İkinci derecede AV blok 9.günde normale geldi. Akut romatizmal ateşin endemik olarak görüldüğü gelişen ülkelerde Mobitz tip 1 ikinci derecede AV blok başlangıçta streptokokal enfeksiyon olmazsa bile akut romatizmal ateşi düşündürmeli.

Anahtar kelimeler: Atrioventriküler blok, akut romatizmal ateş, anti streptolizin o titresi

INTRODUCTION

Acute rheumatic fever is an autoimmune reaction to group A streptococci leading to multi system involvement. The incidence of acute rheumatic fever varies from $\leq 10/100,000$ per year in America and Western Europe to $>10/100000$ per year in Middle East and Asia (1). It remains the most common cause of heart disease in children & young adults in the developing nations (2). The common presentation of acute rheumatic fever includes arthritis and carditis with recurrent attacks lead-

ing to valvular heart disease (3). The clinical features of acute rheumatic fever occur at or close to the peak of the antibody titers. Acute rheumatic fever can be with associated with atrioventricular conduction defects but very rarely it can be associated with second degree AV block of Mobitz type (1,4). We report a case of acute rheumatic fever presenting as second degree atrioventricular block of Mobitz type 1 before the antibody response.

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CASE

A 14 year old boy presented to our out patient department with fever & migratory arthritis of two days duration. He complained of arthritis of the left knee migrating to the left ankle for which he had taken some NSAID. There was no antecedent history of respiratory tract infection or sore throat. On examination the patient was febrile (37.9oC), pulse 80 beats /minute irregular, BP 110/80 mm Hg and respiratory rate 22/ minute. Chest examination revealed normal vesicular breath sounds & Cardiovascular examination was normal excepting for irregular heart sounds. Abdominal examination did not reveal any organomegaly & central nervous system examination was normal. There were minimal signs of arthritis of the left ankle. The hemoglobin was 12.0 g/dl, total leukocyte count was 12.4×10^9 cells/L, the differential leukocyte count was N 64%, L24 %, the PLT 125×10^9 /L, the ESR 10 mm 1 st hour, the urea 24 mg/dl, the creatinine 0.7 mg/dl, the plasma sugar 84 mg/dl, Anti streptolysin O (ASO) titer -150U/L (at admission), C Reactive Protein - Normal, urine - Normal. The ECG revealed Mobitz Type 1 second degree AV block (Figure 1), CXR- Normal, Echocardiography - Normal. ASO repeated on fourth day was 524 IU/L (Normal <333 International Units/ml). Our patient presented with one major(polyarthritis) and two minor (fever, leucocytosis) criteria associated with type 1 second degree AV block of Mobitz without a supportive evidence of streptococcal infection. On fourth day of admission the diagnosis of acute rheumatic fever was established by using WHO 2002-2003 criteria after confirming rising ASO titers. The patient was managed with oral penicillin 500 mg thrice a day for 10 days and aspirin 80 mg/kg/day divided in five equivalent doses. The ECG reverted to normal sinus rhythm on day nine of admission. The patient was discharged with an advice of regular penicillin prophylaxis of benzathine penicillin 1.2 million units every 3 weeks and a repeat echo four weeks later. The patient did not turn for follow up.

DISCUSSION

The clinical manifestations of acute rheumatic fever are secondary to exaggerated immune response to group A beta-hemolytic streptococci in a susceptible host (5). Evidence of group A beta-hemolytic streptococcal infection is essential for labeling the diagnosis of initial attack of acute rheumatic fever despite major and minor criteria. Among various available supportive evidence for group A streptococcal infection elevated or rising ASO ti-

ters are the most reliable evidence of a recent streptococcal infection compared to a positive throat culture or positive rapid antigen test (6). The occurrence of high titers of ASO after clinical manifestation of acute rheumatic fever as in our patient has not been reported although some believe that ASO titers may rise and fall irrespective of the clinical course of the acute rheumatic fever (7).

Atrioventricular blocks are common findings associated with acute rheumatic fever. First degree AV block is the most common conduction defect associated with acute rheumatic fever although it can be associated with other febrile illnesses (4). Second degree AV blocks are usually associated either with diphtheria or myocarditis (8) but rarely can be associated with acute rheumatic fever (4). Complete heart block is also associated with acute rheumatic fever (9) and is much more common than the second degree AV block (4). Other arrhythmias like torsade de pointes are also being associated with acute rheumatic fever (10). The basic mechanism underlying the AV defects in acute rheumatic fever remains unknown.

In addition to first degree AV block in acute rheumatic fever associated arrhythmias (11) and advanced AV blocks (12, 13) are usually self limiting and concomitant valvulitis is rarely associated. The course of complete heart block in acute rheumatic fever may resort to second degree AV block before restoring to normal sinus rhythm (14). Rarely temporary pacing may be needed when complete heart block is complicated with syncope or Stokes-Adams attacks (4).

The case presented here is of a patient of probable rheumatic fever with second degree AV block of Mobitz type1 without recent evidence of Group A streptococcal infection at the time of admission. Although other streptococcal antibody testing, rapid antigen tests for group A streptococcus and throat culture are also the supporting evidences of GAS the rising antibody titers of ASO are the most reliable & earliest evidence of a recent streptococcal infection 6. The clinical features like arthritis preceding the serological evidence of autoimmunity in rheumatic fever is debatable as some physicians are not in favor of diagnosis of acute rheumatic fever if the arthritis is accompanied by a normal ASO (15). However it can be explained either by the toxic effect of extra-cellular toxin of Group A beta hemolytic streptococci on target organs (6) or there is no association between the clinical features of acute rheumatic fever and rise and fall in ASO titers (7) as mentioned earlier.



Figure 1. The ECG of patient showing type 1 second degree AV block of Mobitz.

In conclusion in a country where rheumatic fever is still endemic a second degree AV block of Mobitz type 1 should prompt to the diagnosis of acute rheumatic fever even in the absence of supporting evidence of a streptococcal infection.

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