

Syncope in a child

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ABSTRACT

Acute rheumatic fever (ARF) is a well-characterized illness. However, syncope in ARF due to advanced heart block is very rare. A 10-year-old boy was admitted with recurrent syncope for 12 h. The patient was diagnosed as ARF because of arthritis, elevated acute phase reactants, advanced heart block, high antistreptolysin O titer, and echocardiographic evidence of mitral regurgitation. On the 9th day of hospitalization, the electrocardiogram revealed normal sinus rhythm.

Keywords: Advanced heart block, rheumatic fever, syncope

INTRODUCTION

Acute rheumatic fever (ARF) is a well-characterized illness. PR interval prolongation is a known electrocardiographic feature in ARF. Rarely, second-degree, third-degree atrioventricular (AV) block, and bundle branch blocks can also occur. Complete heart block and Stokes-Adams attacks are extremely rare in ARF and may precede the other signs.^[1]

CASE REPORT

A 10-year-old child presented with a history of recurrent syncope for last 12 h. Electrocardiogram (ECG) revealed advanced heart block-RBBB morphology, wide QRS complex, and variable (2:1, 3:1) conduction block [Figure 1]. He was immediately put on temporary pacemaker. It was possibly an intra-Hisian or infra-Hisian conduction abnormality. He was afebrile without any rash or nodules. He had a pulse rate of 40/min and blood pressure of 92/74 mm Hg. He suffered from an infection of the upper respiratory tract 2 weeks ago. There were no murmurs or rub. Respiratory, gastrointestinal, and nervous system examination did not reveal any abnormality. Next day he became febrile with appearance of right knee joint swelling. Laboratory examination

showed a white blood cell count of 11,300/cmm, sedimentation rate of 94 mm/h, C-reactive protein of 28 mg/l, and antistreptolysin O (ASO) titer of 930 Todd units (normal <200). Other biochemical parameters were normal. An echocardiographic examination revealed mild mitral regurgitation and left ventricular dilatation with preserved biventricular systolic function. Diagnosis of ARF was made following modified Jones' criteria.^[2] Benzathine Penicillin (1.2 million units), aspirin 100 mg/kg/day, and prednisolone (2 mg/kg) were started. On the 9th day, there was normal sinus rhythm [Figure 2] and temporary pacemaker was removed. Knee joint swelling subsided on the 4th day though pain resolved earlier. At 1 month, acute phase reactants were within normal limits. Corticosteroid and salicylates were tapered and then discontinued. He was advised regular penicillin prophylaxis.

DISCUSSION

Prolongation of PR interval is a known electrocardiographic feature of ARF. It has often been ascribed to increased vagal tone and with no structural reasons. Rarely, second-degree, third-degree AV block and bundle branch blocks can also occur^[1] in ARF. Advanced AV block is extremely rare in ARF. The exact mechanism by which rheumatic fever causes conduction disturbances is unknown. Clarke and Keith described prolonged PR intervals in 84% of 508 children with ARF and 3 children had complete heart block.^[3] Temporary pacing was required in one child for Stokes-Adams attacks. Cristal *et al.*, also reported three patients with ARF having AV block of advanced degree.^[4] Though it is a manifestation of cardiac involvement, it was not consistently associated with valvulitis. While valvulitis usually results in damage to the heart leaflets with irreversible structural changes,

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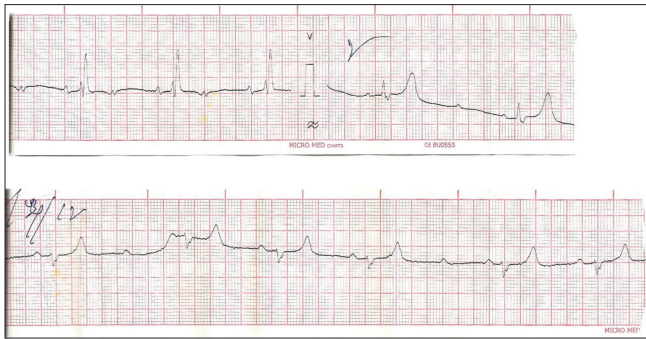


Figure 1: High Grade AV block at admission

advanced heart block appears to represent involvement of the conduction pathways in a reversible fashion.^[1] When advanced heart block occurs with ARF, it appears to be a transient event, resolving over a period of days with anti-inflammatory treatment. Specific treatment, such as insertion of a temporary pacemaker, should be considered only when there is syncope. Zalstein *et al.*, have studied 65 children with ARF from 1994 to 2001.^[1] 72.3% patients had first-degree AV block. 4.6% had complete heart block. One patient responded to aspirin and another to corticosteroid and salicylates. Gyeong-Hee Yoo reported a case of complete heart block in a 13-year-old boy with ARF. The heart block resolved over a period of days with anti-inflammatory treatment.^[5]

Rarely, it may remain for a long time. Shah and Gupta described complete heart block in a 12-year-old girl and it had persisted even after 12 months of follow-up.^[6] However, whether the patient had heart block previous to the onset of illness was not known.

Karacan *et al.*, studied 64 children with ARF. They recorded continuous ECG for 24 h. First-degree AV block was found in 21.9% of children. Mobitz type I block and atypical Wenckebach periodicity were seen in 1.56% of patients. Accelerated junctional rhythm was detected in 12 patients. Premature contractions were present in 29.7% of patients.^[7] Malik *et al.*, reported a case of transient complete heart block in ARF, which reverted spontaneously in a few minutes.^[8] Histological findings in patients with ARF are rarely described. In a previous case series of autopsies of 60 patients with ARF, infiltrations of the bundle with inflammatory cells, swelling of collagen, and fibrinous degeneration of the AV node were described by Gross and Fried.^[9]

Aschoff Bodies were evidently very rare in conduction tissue. The other findings were nonspecific; edema of the bundle, which is represented by the appearance of lightly basophilic material lying in the interstices between the cells sometimes, was found in 15% of cases. Collagenous extension of the septum fibrosum which abuts against the bundle tissue was also seen. This case illustrates the course of a child who developed advanced AV block

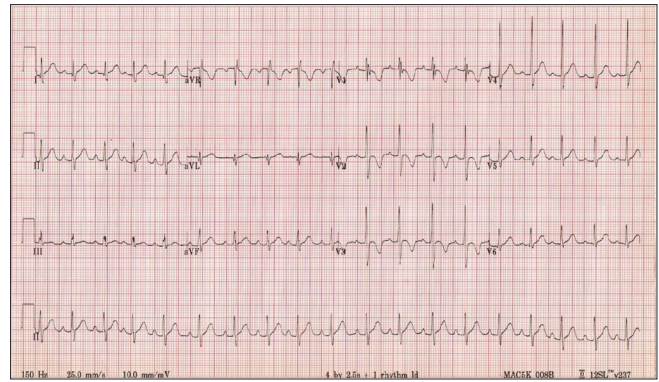


Figure 2: Normal sinus rhythm after 9 days of admission

with ARF. The heart block resolved over a period of days with anti-inflammatory treatment. He may have predominant involvement of conduction system rather than myocardium or endocardium. This case showed that syncope could be the first clinical manifestation of ARF. The ARF should be remembered in young patients presenting with syncope and advanced AV block.

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