

Complete heart block in Acute Rheumatic fever

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Abstract

Rheumatic fever can cause a variety of cardiac conduction disturbances. First-degree heart block is a common electrocardiographic manifestation of acute rheumatic fever and is included in Jones' diagnostic criteria. Other electrocardiographic changes such as sinus tachycardia, bundle branch blocks, nonspecific ST-T wave changes, atrial and ventricular premature complexes have been reported with variable frequency. However, complete heart block is an exceptionally rare manifestation of acute rheumatic fever. We report a 15 years female who developed Complete heart Block during an episode of acute rheumatic carditis. The patient was successfully treated with conventional treatment and Temporary Pacemaker.

Key words Acute rheumatic fever, Carditis, Complete heart block.

Case report

A 15 years girl was brought to emergency with fever, joint pain, and sweating 2 weeks duration. Fever was high grade associated with chills and sweating. Joint pain was migratory in nature involving the large joints like ankle, knee, elbow and wrist. It was also associated with palpitation, shortness of breath NYHA class III. It was not associated with skin lesion, subcutaneous nodule, syncope and seizure.

On examination she was tachycardic with heart rate of 150/min. Her BP was 100/70 mm of hg. Her JVP was raised, minimal pedel oedema was present. CVS examination revealed LV 3rd heart sound and Pansystolic murmur of mitral regurgitation. Joint examination revealed swollen right knee and left wrist joint. All other joints were normal.

On investigation TLC=21,000 N85,L13,M01,E01, Hb-10.9 gm%. ECG-sinus tachycardia, Echo-Mild pericardial effusion, Mild MR and Mild AR, LVEF 45-50%. Her ESR was 60 mm in 1st hour, CRP +++ and ASO >200. Her CXR PA view- B/L minimal pleural effusion, right more than left.

She was diagnosed and managed in line of Acute Rheumatic Fever with heart failure as she had two major Jones criteria(Carditis-pancarditis and arthritis). Decongestion along with steroid and Benzathine penicillin was started. After 12 hrs of hospital admission she developed complete RBBB alternating with LBBB which later progressed to CHB(fig 1). Temporary pacemaker lead was inserted immediately and kept for 7 days. Complete heart block remained for 4 days and reverted to sinus rhythm. On the 7th day her ECG revealed sinus tachycardia so TPI lead was removed. Echo repeated revealed increased severity AR and MR (Mod AR and Mod MR) with Mild pericardial effusion with LVEF of 40-45%. Investigations to rule out other causes of heart block were sent including APLA, ANA, DSDNA, LYME serology was negative. On the 2nd week of her treatment tachycardia persisted, effusion resolved, but MR and AR severity persisted. On the 3rd week she remained afebrile. Her NYHA functional class decreased to II. Her counts decreased to normal. Her steroid dose was tapered and she was discharged with ASA after 4 weeks of hospital admission.

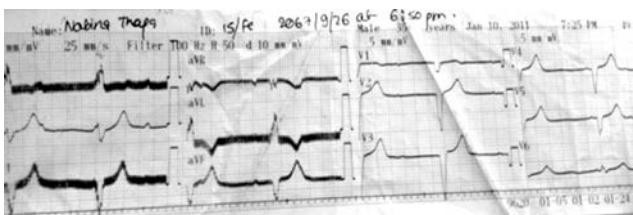


Fig 1: ECG after 4 days of admission showing CHB @ 50 bpm



Fig 2: Complete Heart Block with ventricular escape rate of 50/min

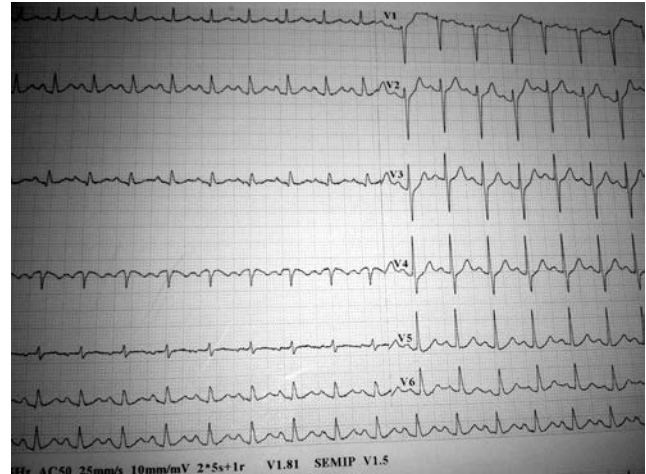


Fig3: Sinus tachycardia with a rate of 114/min

On follow up after 2 weeks her symptoms improved. Her counts were decreased. ECG revealed features of LV volume overload and LAE. MR and AR severity increased to Severe AR and severe MR, no pericardial effusion and normal LVEF 55-60%. She was advised with tapering dose of ASA and to come after 4 weeks. After 4 weeks she came with NYHA functional I though her severity of AR and MR persisted. Her LVEF-60%. She is on regular F/W doing well with NYHA class I symptoms.

Discussion

Disturbances in cardiac conduction and rhythm are common during the acute phase of rheumatic fever. Almost 40% to 60% of patients exhibit a delay in AV conduction, which is manifested by a prolonged PR interval.^{2,4} Besides first-degree AV block, other disturbances encountered in acute rheumatic fever include second-degree AV block, junctional tachycardia with and without AV dissociation, and premature ventricular contractions. Rarely, complete heart block.^{1,2,5,6} have been reported. It has been reported that, although advanced-degree AV block is a manifestation of cardiac involvement, it has not been noted to be consistently associated with valvulitis.⁷ Thus the presence of advanced-degree AV block had not had the prognostic implications of valvulitis.⁷ While valvulitis usually results from valvular damage with irreversible structural changes in the heart, advanced-degree AV block appears to represent involvement of the conduction pathways of the myocardium and does not appear to result from irreversible myocardial damage that can be detected clinically or even electrocardiographically.^{5,8} Second- and third degree AV block may be considered a manifestation of ARF only when associated with other major Jones criteria, even in the absence of valvulitis. However, in the absence of other major criteria, isolated second- and third-degree AV block is most often caused by conditions other than ARF.⁵ In our patient complete heart block was associated with valvulitis, myocarditis, pericarditis and arthritis. Hence, the reason was accepted as ARF. The exact mechanism by which the rheumatic process causes conduction disturbances is unknown. Immunologic relations between the group A streptococcus and the glycoproteins of cardiac valves, nonetheless, have been well established.⁹ Such a relationship, however, has yet to be associated with the conduction system. Furthermore, the atrioventricular node has a very low content of

glycoprotein compared with the peripheral conduction system.¹⁰ Cristal et al.¹¹ showed, in their study of 70 patients with acute rheumatic fever, that although atrioventricular block of advanced degree is a manifestation of cardiac involvement, it was not noted consistently to be associated with valvulitis. While valvulitis usually results in damage to the leaflets, with irreversible structural changes in the heart, advanced atrioventricular block appears to represent involvement of the conduction pathways in a reversible fashion.^{7,12,13} It is found from the studies that although atrioventricular block of advanced degree occurring in

a child can be a dramatic event during acute rheumatic fever, it appears to be a temporary event, resolving over a period of days with conventional treatment.^{7,12,13} Specific treatment, such as a temporary pacemaker, should be considered only when there is syncope due to the block, or there is an Adams-Stokes attack¹² or haemodynamic compromise.^{7,13}

In conclusion, malignant arrhythmias like complete heart block may develop in ARF. Hence, these patients must be monitored carefully. The physician must pay attention to the recent-onset complaints of the patients during the treatment.

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