CASE REPORT

Complete heart block in young adult with acute rheumatic fever

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SUMMARY
Acute Rheumatic fever (ARF) is commonly associated with ECG abnormalities particularly atrioventricular block. However, third degree atrioventricular block or complete heart block is a rare manifestation. Most cases occurred in children. We reported a 25 year old man who developed complete heart block during an acute episode of ARF. He presented to hospital with five days history of fever, malaise and migrating arthralgia, followed by pleuritic chest pain. One day after admission his electrocardiogram (ECG) revealed complete heart block. Transthoracic echocardiography showed good left ventricular function with thickened, mild mitral regurgitation with minimal pericardial effusion. ASOT titer was positive with elevated white blood count and acute phase reactant. A temporary pacemaker was inserted in view of symptomatic bradycardia. The complete heart block resolved after medical therapy. He was successfully treated with penicillin, steroid and aspirin. He was discharged well with oral penicillin. The rarity of this presentation is highlighted.

INTRODUCTION
Acute Rheumatic fever (ARF) is still common and significant in Malaysia. It is also commonly reported with feature of cardiac conduction system involvement as it is a part of Jones criteria for the diagnosis. However, complete heart block is a rare manifestation. It is important to recognize this disease as the underdiagnosing of ARF may lead to recurrence of rheumatic fever, cardiomyopathy and premature death.

CASE PRESENTATION
We report a 25 year old male student with no underlying medical illness presented with five days history of high grade fever. It was associated with migrating arthralgia which started with the right shoulder and followed by the right knee. Subsequently, he developed pleuritic chest pain which worsened upon bending forward. Clinical examination showed temperature of 38.5°C, normotensive with a pulse rate of 107 beat per minute, respiratory rate of 26 per minute and saturation was 99% under room air. Cardiovascular examination revealed dual and normal heart sounds with no murmur, no pericardial rub and respiratory findings were normal. He was noted to have multiple impetigo lesions over bilateral upper and lower limbs. His joints pain was slightly improved with regular doses of oral paracetamol. Initial electrocardiogram (ECG) showed mild ST elevation with no obvious P wave. Meanwhile, chest x-ray showed mild cardiomegaly with clear lungs field. The white blood count was 12.5x10⁹/L with elevated CRP 159.5mg/L. Hemoglobin was 15g/dL and platelets count was 168x 10⁹/L. Renal and liver function were normal.

However, on day two, he complained of dizziness with ECG showing complete heart block with the lowest rate of 30/min. Transthoracic echocardiography (TTE) showed mild mitral regurgitation with minimal pericardial effusion. ASOT titer was positive with elevated white blood count and acute phase reactant. A temporary pacemaker was inserted in view of symptomatic bradycardia. The complete heart block resolved after medical therapy. He was successfully treated with penicillin, steroid and aspirin. He was discharged well with oral penicillin. The rarity of this presentation is highlighted.

Upon follow up at one month, repeated ECG showed normal sinus rhythm with repeated TTE showed only trivial mitral regurgitation and no pericardial effusion. Repeated liver function test was normal. He was well at home with good effort tolerance and functional class.

DISCUSSION
Our patient fulfilled the Jones criteria for diagnosis of ARF with two major, two minor criteria and evidence of elevated ASOT titre. His TTE showed valvulitis with thickened mitral valve and mitral regurgitation. He also had pericarditis as shown by ECG changes and the presence of pericardial effusion. Later, he had complete atrioventricular block which was a rare presentation of ARF. This was also added with presence of polyarthralgia with shoulder and knee joint involvement. The minor criteria were fever and high CRP level. These clinical presentation and investigation were consistent with ARF.
ARF is mainly a disease of children aged 5 to 14 years and the range of age affected in Malaysia can be from 1 to 35 years old. Despite the rarity of its occurrence in adults, misdiagnosis may carry sequelae of Chronic Rheumatic Heart Disease (CRHD) which leads to valvular damage. The recurrence rate is the highest during the first year following the first ARF episode and decreased to zero by ten years after the first episode. This is the rationale of continuing antibiotic prophylaxis until age 40 years, in order to prevent recurrent episodes.

ARF is commonly caused by upper airway infection by Group A streptococcus. However, instead of acute pharyngitis, our patient presented with recurrent episodes of skin infections as he had been living in a hostel where hygiene was an issue. The episode of streptococcal skin infection and ARF has been reported before where increasing evidence of skin associated Streptococcal pyogenes infection causing ARF. Therefore treatment was immediately initiated as universally recommended.

ARF is commonly associated with ECG abnormalities particularly first degree atrioventricular block. A study done in Australia found that carditis was present in 27.5% of ARF cases. In 25 case reports of atrioventricular block in the setting of ARF analyzed by Omar et al, only five of which were adult cases. Even though, a higher degree of atrioventricular block is uncommon, there were cases reported in developing countries like Korea and Bahrain.

It has been shown that even with the advance degree of heart block, this is a reversible condition which can be successfully treated with high dose aspirin, penicillin and short course of steroid for pericarditis with effusion. Most observations point to the absence of correlation between carditis and the severity of ECG.

A few studies had correlated the AV block and the degree of carditis, they found that the pathophysiology was poorly understood, and it was thought due to the involvement of pancarditis. Furthermore, its presence did not correlate with the outcome of ARF. Our patient required insertion of a temporary pacemaker in view of symptomatic bradycardia which was removed as his condition improved.
CONCLUSION
We conclude that the diagnosis of ARF relies on health professionals being aware of the diagnostic features. Patient may also develop complete heart block which is an unusual presentation for the diagnosis of ARF. This should be considered even in adults when they fulfilled the Jones criteria. However, complete heart block appears to be a temporary event, resolves with conventional medical therapy and has no relationship with the prognosis.