2328/2500 characters including spaces

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Title:

A Viral Offender: Complete Heart Block and Cardiogenic Shock due to Coxsackievirus

Background [253 characters]

Coxsackievirus infection causes myocarditis which may present as third-degree atrioventricular block (AV) and cardiogenic shock [1]. We present a case of *Coxsackievirus*-induced third-degree AV block, highlighting the serious complication of myocarditis.

Objectives [118 characters]

Identify rare presentation of myocarditis as complete heart block and the importance of early diagnosis and treatment.

Methods: N/A

Case Report [1301 characters]

An 18-year-old female who recently immigrated from Mexico, with no prior cardiac history, presented with epigastric and right upper quadrant abdominal pain, nausea, and vomiting. She was afebrile, the ECG revealed sinus tachycardia with a heart rate of 105 beats per minute, AST 167 U/L, ALT 62 U/L, and lactate of 3.79 mmol/L. Within hours, she developed bradycardia and hypotension with a heart rate of 53 beats per minute. ECG revealed third-degree AV block. A temporary pacemaker was placed. High sensitivity troponin T was 2200 ng/L. Echocardiogram showed a left ventricular ejection fraction of 60-65% with severe hypokinesis of the mid-to-apical right ventricular free wall and pulmonary artery systolic pressure of 30 mmHg. Cardiac catheterization showed normal coronary arteries, mild pulmonary hypertension with pulmonary capillary wedge pressure of 18mmHg, a Fick-estimated cardiac output of 3.37 L/minute, cardiac index of 1.85 L/min/m^2, and a pulmonary artery pulsatile index of 0.70. She progressed to severe cardiogenic shock requiring vasopressors and inotropic support. Eventually, serology was positive for *coxsackievirus*. Steroid therapy led to the resolution of heart block and improvement in cardiac hemodynamics. She was discharged home in stable condition after a few days.

Discussion [656 characters]

ECG abnormalities are usually the first sign of *coxsackievirus*-induced myocarditis. It includes sinus tachycardia, supraventricular tachycardia, atrial flutter, ventricular tachycardia, and complete AV block [3]. Complete heart block is a serious arrhythmia observed in fewer than one-third of cases presenting with myocarditis [2]. Temporary transvenous pacing is recommended for patients with complete AV block to prevent hemodynamic compromise and further decline in ventricular function. Clinical vigilance in our case brought a positive outcome

that underscores the importance of a thorough diagnostic approach and individualized treatment strategies.

References

1. Camilleri T, Grech N, Caruana M, Sammut M. Acute lymphocytic myocarditis presenting as complete heart block in an adult: a case report. Egypt Heart J. 2023 Aug 30;75(1):77. doi: 10.1186/s43044-023-00406-w. PMID: 37646955; PMCID: PMC10468464.
2. Caughey, R. W., Humphrey, J. M., & Thomas, P. E. (2014). High-degree atrioventricular block in a child with acute myocarditis. *Ochsner journal*, *14*(2), 244–247.
3. Zhang, Qian MMa; Yuan, Jia MMa; Zhao, Wei MMa; Ouyang, Weiwei MDb; Chen, Bowen MMa; Li, Yehong BDa; Tao, Junling MMa; Chen, Xianjun MMa; Li, Guangsu MMa; Guo, Zhendong BDc; Liu, Ying MDa,*. Coxsackie B virus-induced myocarditis in a patient with a history of lymphoma: A case report and review of literature. Medicine 103(10):p e37248, March 08, 2024. | DOI: 10.1097/MD.0000000000037248

Figure Legends

Figure 1: Electrocardiogram showing third-degree heart block