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Back to competition after ECPELLA: returning to sports following influenza B fulminant myocarditis

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Introduction: Fulminant myocarditis (FM) is characterized by sudden-onset cardiogenic shock with high mortality rate without treatment. Influenza B is a rare cause of FM, however Influenza B myocarditis has usually favorable long-term prognosis.[1]

Case report: A previously healthy 16-year-old competitive athlete presented with fatigue and chest pain seven days following the onset of a respiratory infection (PCR proven Influenza virus type B). ECG revealed sinus tachycardia with diffuse ST segment elevation, while laboratory work-up indicated myocardial lesion and incipient end-organ damage. Echocardiography revealed mild diffuse thickening of myocardium, normal sized left ventricle with mildly reduced systolic function and small pericardial effusion. Despite medical therapy (neurohormonal heart failure drugs, non-steroidal anti-inflammatory drugs, and oseltamivir), the patient progressed in less than 36 hours to cardiogenic shock requiring combined inotropic support and vasopressors following a brief episode of cardiac arrest due to pulseless electrical activity. Echocardiography demonstrated progression of biventricular dysfunction with markedly edematous myocardium and pericardial effusion. Heart Team assembled and decision was made to use Impella CP, however due to high level of support requirement complicated by significant hemolysis, the mechanical circulatory support (MCS) circuit was upgraded to ECPELLA. Endomyocardial biopsy was not performed after individualized assessment of procedural risk and expected therapeutic impact. While on temporary MCS, the patient was treated with high dose steroids, inotropes and other supportive treatment with positive effect. While cardiac function demonstrated recovery, respiratory support remained necessary, so the ECMO circuit was reconfigured from VA to VV on day 7. Cardiac function recovery allowed Impella removal the following day, and VV-ECMO weaning the day after. Cardiac function, ECG and biomarkers normalized by discharge. Cardiovascular magnetic resonance (CMR) four weeks after discharge showed LVEF 59%, mildly elevated T1 in the basal inferior segment and no late gadolinium enhancement (LGE). CMR five months after discharge showed normalized T1 mapping, no LGE and preserved biventricular function sustained at nine months. Reduced-intensity training resumed six months after myocarditis, followed by return to competitive sport after the nine-month follow-up CMR.

Conclusion: Complete cardiac recovery and return to competitive sport are possible after FM requiring advanced MCS. This case demonstrates potentially reversible nature of FM and validated early aggressive intervention, while at the same time emphasizes individualized decisions on diagnostic procedures such as EMB. FM remains a life-threating emergency, but with guideline-directed medical management, including advanced MCS, patients can achieve complete recovery and return to full quality of life including competitive sports.

LITERATURE

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