

**Cardiovascular magnetic resonance reveals pathophysiologic background in paediatric patients with ventricular tachycardia and normal echocardiographic findings**

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**INTRODUCTION:**

To evaluate the pathophysiologic background of ventricular tachycardia (VT) in paediatric patients with normal echocardiographic findings using cardiovascular magnetic resonance (CMR).

**METHODS:**

Between 2000-2016, 110 patients (60 male/50 female), aged 10 -18 years, with recent history of ventricular tachycardia VT and normal echocardiographic findings, were referred in our tertiary center for CMR evaluation.

CMR was performed using a 1.5 T magnet and included functional evaluation in short and long axis, oedema assessment using T2w imaging and fibrosis evaluation using late gadolinium enhancement (LGE).

**RESULTS:**

Right and left ventricular function was normal in all paediatric patients. However, the CMR tissue characterization revealed evidence of acute myocarditis in 35/110 and various types of cardiomyopathies in 55/110 (noncompaction cardiomyopathy, arrhythmogenic right ventricular cardiomyopathy, hypertrophic, restrictive and dilated cardiomyopathy). In 20/110 no morphologic or functional abnormalities were identified by CMR .

The T2 ratio was  $3.4 \pm 0.03$  and  $1.5 \pm 0.04$  in myocarditis and cardiomyopathy group, respectively ( $p < 0.05$ ). In contrary the LGE was  $5 \pm 2\%$  and  $15 \pm 3\%$  in myocarditis and cardiomyopathy group, respectively ( $p < 0.05$ ).

**CONCLUSION:**

After CMR evaluation of a paediatric population with history of recent VT and normal echocardiographic findings, evidence of myocarditis and cardiomyopathies was identified. However, in 18% of them no functional or anatomical abnormality was identified