Abstract: P1528

The added value of cardiac magnetic resonance to the diagnosis of patients after aborted sudden cardiac death

Authors:
L Szabo¹, CS Czimbalmos¹, Z Dohy¹, I Csécs¹, A Toth¹, F Suhai¹, D Becker¹, L Geller¹, B Merkely¹, H Vago¹, ¹Semmelweis University Heart Center - Budapest - Hungary,

Topic(s):
Prevention – Cardiovascular Risk Assessment: Imaging

Citation:

Funding Acknowledgements:
Project no. NVKP_16-1-2016-0017 has been implemented with the support provided from the National Research, Development and Innovation Fund of Hungary

Introduction: An estimated 25% of all cardiovascular deaths are due to sudden cardiac death (SCD). The primary cause of SCD is coronary artery disease, however cardiac diseases accounted for SCD differ in young vs. older individuals. In patients with normal coronary angiography (NCA) the differential diagnosis is still challenging, due to the broad spectrum of underlying cardiovascular abnormalities. Cardiac magnetic resonance (CMR) provides accurate tissue specific and functional information of the heart.

Purpose: We aimed to investigate patients after aborted sudden cardiac death but NCA using cardiac magnetic resonance imaging (CMR). Our goal was to evaluate left and right ventricular parameters, presence of late gadolinium enhancement (LGE) and to assess the diagnostic value of CMR.

Methods: We enrolled 84 consecutive patients (39±13 y; 51% male) after aborted SCD with NCA and without CMR contraindication. CMR examination including long- and short-axis cine, T2-weighted and LGE images were performed. Left and right ventricular parameters were evaluated. Presence and pattern of the oedema and LGE were also assessed.

Results: Structural myocardial abnormality was present in 57% of pts: dilated (n=13), arrhythmogenic right ventricular (n=6) and hypertrophic (n=4) cardiomyopathy (CMP), moreover acute (n=2) and chronic (n=3) myocardial infarction, acute (n=2) and chronic (n=2) myocarditis, Tako-Tsubo CMP (n=1), noncompaction CMP (n=1), endomyocardial fibrosis (n=1). In 13 cases aspecific structural alterations were detected with (n=7) and without (n=6) LGE. Only 13% of the patients showed ejection fraction lower than 35% (LVEF=52±9%), 54% showed LV dilation (LVEDVi>100 ml/m² in males and >90 ml/m² in females; LVEDVi=104±22 ml/m²). LGE was present in 36%, showing ischemic pattern in five cases and nonischaemic pattern in 25 cases. Eleven patients were elite athletes (28±10y, 91% male, training hours: >10 hours/week). Three of them showed ARVC based on the current Task Force criteria, another three athletes showed aspecific structural alteration with nonischaemic LGE.

The CMR examination confirmed the referral diagnosis in 22%, excluded the presence of structural myocardial alteration in 43% and changed the clinical diagnosis in 35% of the patients.

Conclusion: CMR has an important diagnostic value in patients after reanimation but NCA. More than half of these patients showed structural alteration and CMR provided a diagnosis in 42%.