Clinicopathological investigation on children with dysrhythmias using endomyocardial biopsy
with special reference to histopathology between tachycardia induced cardiomyopathy and
bradyarrhythmia related cardiomyopathy-

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Purpose: Tachycardia-induced cardiomyopathy(TIC) has gained increasing awareness and attention,
however recently not only TIC but also bradyarrhythmia related cardiomyopathy has been recognized.
WPW syndrome with dilated cardiomyopathy(DCM) in the absence of tachyarrhythmias is also
recognized. The incidence of latent DCM state among dysrhythmia patients is unclear. Accurate
diagnosis of TIC and bradyarrhythmia related cardiomyopathy  is clinically important as these
cardiomyopathy  can develop severe ventricular dysfunction or DCM. This study examines the
demographic, clinical and histopathological features of dysrhythmia related cardiomyopathy in
childhood with special reference to its subtype of dysrhythmias. Cinical symptoms were compared with
baseline ECG, 2DE, EPS, MRI and endomyocardial biopsy(EMB) with light microscope as well as
ultrastructural characteristics. Patients and method: Between 1990 and 2012, a total of 77 patients
with dysrhythmias were enrolled, including 56 tachyarrhythmias;35 SVT, 2 AFL, 19 VT and 21 patients
with bradyarrhythmias; 7 idiopathic congenital complete heart block(CCHB), 4 myocarditis, 1
hypertrophic cardiomyopathy(HCM). Histopathology was evaluated with semiquantitative morphometry.
Results: DCM was found 9 in tachyarrhythmias and 3 in bradyarrhythmias. Ablation was performed 29
for SVT and 5 for VT, 3 pacemaker implantation for CCHB and 1 ICD for HCM. Histopathology on
EMB showed abnormalities of inflammatory cell infiltration, disarray of myocytes, vacuolar
degeneraton, lysis of myofibrils and higher % fibrosis in long-term dysrhythmia patients. There were
no significant differences in histopathological abnormalities between both dysrrhythms, although
severer myocardial damages was noticed in long-standing dysrhythmias and LBBB morphology
bradyarrhythmias. Discussion and Conclusions: Although the incidence of TIC and bradyarrhythmia
related cardiomyopathy has been reported not so frequently, some cases were present among
dysrhythmia patients in our study. Histopathology showed various abnormalities but not specific.
Persistent or recurrent tachyarrhythmias, myocarditis and dys synchronous ventricular contraction could
be the cause of left ventricular dysfunction, leading to dysrhythmia related cardiomyopathy. Abnormal
accessory pathway also may include LV dys synchrony, leading to adverse remodeling and ventricular
dysfunction. The clinical spectrum of this complex pathology is highly varied. EMB may still be helpful
to determine etiology in undiagnosed cardiomyopathy. Early diagnosis of dysrhythmia related
cardiomyopathy enables the start of effective treatment with the purpose of better outcomes in this
population.