Relationship of Atrial Tachycardia and Dilated Cardiomyopathy

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Introduction: Frequent supraventricular tachycardia more than 120 bpm may cause cardiomyopathy. Arrhythmia with atrial fibrillation or flutter in the old population is most frequent associated with this form of tachycardioamyopathy. We report a rare pediatric patient with atrial tachycardia and dilated cardiomyopathy and review the previous literature.

Methods: A 15-year-old male patient with a diagnosis of severe dilated cardiomyopathy and atrial tachycardia was recruited. We examined the laboratory data, response to medical therapy, and follow-up of this patient.

Result: This pediatric patient was referred from local hospital for cardiac transplantation. Initially, Echo showed severe dilation cardiomyopathy with LVEF about 15-20%. EKG revealed atrial tachycardia with ventricular rate 130-140 bpm. Cardiac CT showed dilated cardiomyopathy with severe impaired contraction, but no scar. EF and wall motion examination showed LV 13.3%, RV 20.8%, and marked dilation of LV with severe general hypokinesia. Perfusion scan: persistent defect of LV in apex, anterior wall (20-30% decrease), inferior wall (30-40% decrease). Exercise test revealed maximal aerobic ability about 30.16% predicted. Major catheterization findings included dilated LV with moderate MR, PA pressure 54/39/45 mmHg, RV pressure 57/8/17 mmHg, RA pressure 22/23/16 mmHg, LT PCWP 37/42/36 mmHg, and CO 2.01 L/min. RV biopsy: hypertrophic myocytes and mild interstitial fibrosis without evidence of amyloidosis or myocarditis. Listing for cardiac transplantation was prepared. He was managed with digoxin, carvediol, propranolol, and diuretics. Transient sinus rhythm with ventricular rate 64 bpm occurred to him, and atrial tachycardia (120-130 bpm) persisted almost all day long. Amiodarone was prescribed and resulted in persistent sinus rhythm (60-80 bpm). Follow-up echo showed mild improvement of LVEF (20-25%). He was relatively asymptomatic under CHF control and amiodarone treatment.

Conclusion: Persistent atrial tachycardia may cause severe cardiomyopathy with requirement of cardiac transplantation, even in a pediatric patient. Optimal management of arrhythmia, using medical or ablation therapy, is a potential way to improve cardiac function.