

Cardiac Abnormalities Determined by Tissue Doppler Imaging and Arrhythmias in Adolescents with Anorexia Nervosa

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Background

Anorexia Nervosa (AN) has a prevalence of 0.5-3% in the adolescent population. Cardiac anomalies including arrhythmias, pericardial effusion and myocardial dysfunction are risk factors in these patients. Tissue Doppler imaging echocardiography (TDI) is an accepted tool in the evaluation of cardiomyopathies. Our objective is to describe cardiovascular anomalies, particularly in TDI in patients with AN.

Methods

Retrospective review of ECG, Holter and echocardiography in 28 patients diagnosed with AN; 20 females and 8 males with a mean age of 14.6 years (range 11 to 19), and mean disease duration of 10.3 months (range 1 to 60).

Results

The ECG was abnormal in 71%: sinus bradycardia ($<60/m$) was observed in 16/28 (57%), and prolonged QTc ($>460ms$), low voltage, and ectopic beats in 4/28 (14%) each. Holter confirmed sinus bradycardia without significant pauses. Wenckebach AV block was observed in one patient. SVT or VT were not observed.

Echocardiography showed structurally normal hearts in all patients. Pericardial effusion was seen in 2/28 (7%). LV mass was decreased ($<44 g/m^2$) in 3/28 (11%). Contractility was normal with a mean fractional shortening of 38.4% (26-48.9%), except in one patient with 26%, and mean ejection fraction of 0.73 (0.59 to 0.87). TDI evaluation revealed systolic and diastolic dysfunction with decreased S' , e' and a' velocities ($< -2SD$) in the septal and lateral basal segments in two patients (7%), both with severely decreased LV mass. They had a disease duration of 9 and 17 months, no different from the rest. TDI also showed a trend towards low basal segments velocities (S' , e' , a') between $-1SD$ and $-2SD$, in 10/28 patients (36%).

Conclusion

Sinus bradycardia was frequent but severe rhythm disorders were not seen in our study. The most relevant finding was that of abnormal TDI velocities indicating systolic and diastolic dysfunction, associated with significant reduction in ventricular mass and independent of disease duration in 2 Pts (7%). A trend for decreased TDI velocities was seen in 36% additional patients. Cardiac complications are a significant cause of morbidity and mortality in AN. Early diagnosis of myocardial dysfunction with TDI could be an indicator for aggressive nutritional intervention.