

**Usefulness of three-dimensional echocardiography in the evaluation of intraventricular dyssynchrony in children with refractory heart failure secondary to dilated cardiomyopathy and its correlation with QRS morphology and duration .**

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**Introduction and objective.**

Intraventricular dyssynchrony is common in patients with dilated cardiomyopathy (DCM). Adults with DCM and QRS duration >120 msec may benefit from cardiac resynchronization therapy (CRT ), but children with heart failure (HF ) caused by MCD often show a narrow QRS. The aim of the study was to evaluate intraventricular dyssynchrony with 3D echocardiography in children with DCM and analyze its correlation with QRS morphology and duration .

**Methods.**

Transversal, observational, and analytical study. Echocardiographic studies were performed using a Philips IE 33 echocardiography system.

**Results.**

10 patients were studied. Six women. Age:  $81.6 \pm 61$  months. Four children were in functional class III , five in class II and in one in class IV. LVEF was 8-49% , QRS duration  $93 \pm 31.5$  msec. Three children had a QRS duration >120 msec. The ECG showed LBBB in 2 patients with a QRS duration of 122 and 158 msec, respectively. RBBB in addition with anterosuperior fascicle block was observed in one patient (QRS 128 ms). The asynchrony index ( AI) assessed with real time three-dimensional echocardiography was  $6.78 \pm 3.66$ . The time to reach the minimum volume of the last segment was 110-670 msec . Although the three children with QRS > 120 msec showed abnormal AI (7.49, 8.24 and 3.98 respectively), these did not correspond with the largest AI. The largest AI matched with narrow QRS (AI 11.66/QRS 100 msec, AI 10.4/QRS 86 msec and AI 10.3/QRS 80 msec). The asynchrony index did not correlate with the morphology or the QRS duration but correlated with functional class.

**Conclusions**

The real-time three-dimensional echocardiography is a useful tool in the evaluation of intraventricular dyssynchrony in children with refractory heart failure secondary to dilated cardiomyopathy. The AI showed no correlation with the QRS duration in the surface 12-lead electrocardiogram in this small group of patients.