Summary

As regard impressive advances in Tissue Doppler imaging applications over the last decades, TDI technique continues to be a subject of studying not of clinical application in real world especially in developing countries.

The assessment of cardiac dyssynchrony is gaining importance in clinical practice. Furthermore, adjunctive assessment of resting dyssynchrony may help to explore new indications for CRT.Among all the available techniques, myocardial imaging has been most validated and proven useful in clinical practice.

In view of conventional dual-chamber pacemakers ,older attempts at applying electrical pacing techniques with conventional dual-chamber pacemakers restoring or optimizing atrioventricular synchrony to manage heart failure in patients with dilated cardiomyopathy, did not succeed in improving symptoms and prognosis, most likely because at that time attention had not been paid to the adverse effects of electrical and mechanical dyssynchrony produced by a preexisting LBBB or iatrogenically accentuated intraventricular conduction delay conferred by right ventricular apical pacing

This study was conducted at Cairo University Children's Hospital (CUCH).It included 20 patients (infants and children) with postoperative open heart surgery for congenital heart surgery with introduction of epicardial pacing wires (in RA , at base of lateral wall of RV and LV).

The study was performed in the pediatric intensive care unit at a mean of 9 days (range, 7 to 15 days) after surgery was completed. The patients data was obtained for demographic and baseline echo-Doppler study, All patients underwent three modes of cardiac pacing (Atrial , conventional and biventricular pacing modes) , while assessing the parameters in each pacing mode (including systolic BP, QRS duration ,COP , IVT & PSC of basal lateral wall of

LV & RV in TDI study) . The present study included 20 patients of whom; there were males (50%) and females (50%).

There were (20%) of the patients had atrioventricular septal defect, (20%) of the patients had double-outlet RV with pulmonary stenosis, (20%) of the patients had Fallot's tetralogy, (10%) of the patients had atrial septal defect with patent ductus arteriosus, (10%) of the patients had transposition of the great arteries, (10%) of the patients had DORV, and (10%) of the patients had VSD with pulmonary stenosis. The age of the patients ranged from 2 to31 months, with mean age (12) months of whom (55%) of the patients had younger than 1 year and (45%) of the patients had older than 1year.

The statistically significant factors showed that improvement in the TDI-derived parameters which assess ventricular dyssynchrony include cardiac index & QRS duration with BDOO. The mean value of worsened ventricular dyssynchrony (presented with Δ IVTand Δ PSC) in the current study was higher in CDOO versus with BDOO as compared with AOO (22, 32 ms versus 7, 8ms, p value <0.001) respectively. Also it was found that C.I & QRS duration had worsened with CDOO versus with BDOO as compared with AOO (4.2 versus 5.1 l/min/m2, p value <0.001) and (104 versus 71ms, p value <0.001) in respected order. In the current study, systolic blood pressure did not change significantly among the three pacing modes.

We concluded that using Tissue Doppler imaging technology as an alternative method to the QRS duration is important for describing the mechanical dyssynchronization. We also recommend using the BDOO instead of CDOO in all patients in need for pacemaker permanently or temporarily, regardless of baseline functional status, ejection fraction, or randomization.