

Title: End point separation between mitral valve and septum over the Diastolic Left Ventricle Diameter (EPSS/LVDd) of the Long-axis View of Echocardiography is an easy and reliable parameter for assessment of global LV dysfunction in patients of Thalassemia major

Jeng-Sheng Chang¹, Yu-Chih Huang¹, Kang-Hsi Wu², Ching-Tien Peng², Divisions of Cardiology¹ and Oncology², Children's hospital, China Medical University Hospital, Taichung

Category: acquired heart disease

Abstract:

Background: Myocardial dysfunction is a common complication in patients of Thalassemia major TM. Although echocardiography is a convenient instrument, none of its parameters so far has been considered as an ideal surrogate for prediction of impending heart failure in TM. However, our previous study of using the long-axis, M-mode echocardiographic measurements in TM patients with acute heart failure proved that the distance of end point separation between mitral valve and septum (EPSS) and the ratio of EPSS divided by diastolic diameter of the LV (EPSS/LVDd) was significantly correlated with their clinical and laboratory improvements. This study intended to extend the clinical application of EPSS and EPSS/LVDd to TM patients of long-term follow up.

Material and Method: Jan. 2003 through July 2012, the Thalassemia registry of China Medical University Hospital, Taiwan, enrolled 34 TM patients for daily oral iron chelator therapy and echocardiographic studies, which were performed every 6 months to one year by two doubly-blinded technicians. The normal ranges of EPSS (2.5 ± 1.7 mm) and EPSS/ LVDd (0.08 ± 0.06) were used as references. Compared to the baseline data at enrollment, the trends of changes in EPSS, LVDd and EPSS/LVDd were assessed by the Generalized Estimation Equation (GEE).

Result: Their average ages were 13.4 ± 3.7 years at enrollment and the average follow up duration was 7.2 ± 2.0 years. In accord with improvements of EPSS/LVDd, favorable response to iron chelation occurred in 24 of the 34 patients (13 with direct improvement, 5 stayed as normal and 6 showed delay improvement after initial worsening), and unfavorable response occurred in 10 patients (5 remained as abnormal and 5 even deteriorated). GEE analysis showed a general trend of rising EPSS/LVDd after 5 years of follow up ($p < 0.01$).

Conclusions: EPSS/LVDd is a convenient parameter to monitor the global cardiac function of

TM patients.