The role of mitral propagation velocity, tricuspid annular plane systolic excursion and biventricular volumes in the assessment of children with repaired tetralogy of Fallot


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Introduction: We aimed to investigate mitral flow propagation velocity (Vp), TAPSE, biventricular volumes, BNP and exercise test, to explore the association between these parameters and clinical status.

Methods: Patients with repaired TOF (mean age, 11.6 ± 2.7 years, 14 boys, 11 girls) were selected from clinical database. All patients were classified as NYHA functional class I. Forty percent of patients had palliative shunts before corrective surgery (Blalock-Taussig shunt in 10 patients). We obtained Vp and TAPSE. Duration of exercise, blood pressure, maximum heart rate and finger pulse oximetry were recorded continuously in exercise testing. Venous blood samples for the determination of BNP values were obtained from all subjects before and after the exercise test.

Results: There was no significant differences between the levels of brain natriuretic peptide before and after exercise in the study group (p=0.320, p=0.321 respectively). Comparison of brain natriuretic levels after exercise in the study group revealed that patients who had modified BT shunt before corrective surgery had significantly higher levels compared to patients who had not history of modified BT shunt (p=0.013). Right ventricular end diastolic and end systolic volume indexed to body surface area was significantly higher in patients than controls (p=0.001). Patient group had higher left ventricle eccentricity index (p=0.001). The mean TAPSE values were significantly lower in study group when compared with healthy subjects (p=0.001). Vp were higher in patient group, however there were no statistical significance (p=0.655). Duration of follow-up after surgery was negative correlated with BNP level before and after exercise and positive correlated with right ventricular end diastolic and end systolic volume in patient group (r=-0.507, r=-0.648, r=-0.587, r=0.598 respectively).

Conclusions: According to the mid-term results of children with repaired TOF, we did not show any statistical difference in mitral flow propagation velocity (Vp). Up to our knowledge, there were no study regarding Vp. TAPSE along with BNP can be used in the follow-up of patient with repaired TOF.