EFFECT OF BALLOON PULMONARY VALVULOPLASTY ON GROWTH OF PULMONARY ANNULUS IN INFANTS WITH TETRALOGY OF FALLOT

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Background:

Percutaneous balloon pulmonary valvuloplasty (PBPV) is an alternative intervention in infants with Tetralogy of Fallot (TOF). It not only effects in improving hypoxia but also in promoting the pulmonary annulus (PA) growth.

Objectives:

To evaluate the effect of balloon pulmonary valvuloplasty on pulmonary annulus growth in infants with Tetralogy of Fallot.

Methods:

In this study we evaluated the effect of PBPV on PA growth in infants with TOF. To eliminate the factor of systemic to pulmonary shunt (SPS) that may promote PA growth, we divided TOF infants in 2 groups, group A, patients underwent PBPV with or without other SPS and group B, patients attempted SPS but without PBPV.

Results:

Sixty patients were included, 28 patients in group A and 32 patients in group B. Age at intervention in group A (range, 0.4-5.4; median 1.4 months) was lower than group B (range, 2.3-7.7; median 4.8 months), p-value 0.02. The body weight in group A (range, 3-5.5; median 3.7 kg) was also lower than group B (range 4.1-6.4; median 5.9 kg), p-value 0.02. Echocardiographic data at the mean follow-up period of 37.2 months (3-88 months) in group A and 39.6 months (6-95 months) in group B demonstrated an increase in mean PA diameter from 5.0±1.3 mm to 10.2±2.9 mm, p-value < 0.001 in group A; and from 6.2±2 mm to 9.5±2.9 mm, p-value < 0.001 in group B. There was also an increase in median PA z-score in group A from -3.4SD (-3.9 to -2.6SD) to -1.8SD (-2.5 to -0.8SD), p-value 0.002; but not in group B, from -2.9SD (-4.5 to -1.3SD) to -2.7 (-3.6 to -1.4SD), p-value 0.73. By using PA Z score as

absolute value, there was a statistically significant increase in PA z-score during follow-up in group A, but not in group B.

Conclusion:

Balloon pulmonary valvuloplasty in infants with TOF can facilitate the growth of pulmonic annulus even after elimination of systemic to pulmonary shunt effect.