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EVALUATION OF LEFT VENTRICULAR TORSION AFTER ARTERIAL SWITCH OPERATION FOR D-TRANSPOSITION OF THE GREAT ARTERIES WITH INTACT VENTRICULAR SEPTUM BY TWO-DIMENSIONAL SPECKLE TRACKING IMAGING

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Objectives To evaluate anatomic left ventricular twist and untwist mechanics in patients of transposition of the great arteries with intact ventricular septum (TGA/IVS) up to 4 years after arterial switch operation using two dimensional ultrasound speckle tracking imaging (STI).

Methods 30 patients aged from 28 days to 4 years (median age was 4 months) were followed up and divided into 2 groups by age: the TGA1group (17 patients, 28 days–6 months) and theTGA2 group (13 patients, 6 months–4 years). Thirty age-matched controls were also analysed. We obtained LV twist versus time and twist velocity versus time profiles by STI. The mean value of rotation at each plane, the peak twist, time to peak twist, peak twist velocity and time to peak twist velocity were measured respectively and the rate of LV untwisting, the normalised peak twist and peak untwisting velocity were calculated.

Results Compared with normal 1 group, the net and normalised peak twist in TGA1 group were reduced (11.78 ± 4.77 vs 16.36 ± 5.99 ; 3.45 ± 1.51 vs 5.10 ± 1.99 $p < 0.05$) because of lower apical rotation (7.94 ± 4.07 vs 13.16 ± 5.93 $p < 0.05$); the net and normalised peak untwisting velocity were also lower than the control group (-132.33 ± 59.00 vs -204.20 ± 81.50 , -38.43 ± 18.54 vs -61.37 ± 23.63 $p < 0.05$) while the rate of untwisting was higher (0.99 (1.05) vs 0.49 (0.64) $p < 0.05$). No LV twist abnormalities were observed in TGA2 group.

Conclusions STI may distinguish the impairment of LV systolic function in TGA/IVS early after operation. But this is a transient process, in the middle-term period patients performed as good as normal children because of the internal twist characteristics were reserved. So the overall prognosis is good.