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Twin-twin transfusion syndrome treated with fetoscopic laser coagulation: short-term cardiac function after birth.

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Introduction:

There are only a few reports on the effect of twin-twin transfusion syndrome (TTTS) on cardiac function in the infant. Since long-term cardiac outcome is grossly normal in TTTS survivors, but short-term studies are still lacking, we aimed to assess cardiac function in the early neonatal period to investigate whether short-term cardiac outcomes are also favourable.

Methods:

Prospective echocardiographic follow-up of 93 TTTS pregnancies treated with laser surgery. Echocardiography was performed at the first day of life and at the age of 1 month (corrected for prematurity). Comparisons were made between donors and recipients and between TTTS-twins and a control-group of 9 uncomplicated monochorionic twin-pairs.

Results:

48 TTTS twin-pairs had both scans, 31 twin-pairs and 9 single survivors had one scan. At the first scan, donors had lower velocities across the aortic valve (maximum, mean and velocity time interval) as compared to recipients (maximum peak velocity: donor 0.65 ± 0.17 m/s vs recipient 0.74 ± 0.20 m/s, $p=0.009$), but not when compared to controls ($p=0.96$). As compared to controls, both donors and recipients had lower tissue doppler imaging (TDI) derived indices of the left ventricle (S'-wave controls 0.049 ± 0.008 vs recipient 0.033 ± 0.013 , $p=0.00$, vs donors 0.032 ± 0.011 , $p=0.00$; A'-wave controls 0.053 ± 0.014 vs recipients 0.040 ± 0.0016 , $p=0.00$, vs donors 0.043 ± 0.017 , $p=0.02$). In donors the septal S'-wave was also decreased as compared to controls (0.035 ± 0.020 vs 0.039 ± 0.005 , $p=0.016$). No significant differences in ventricular inflow or strain (rate) of the LV free wall were found. At the age of 1 month no (clinically) significant differences were found between donors and recipients or between TTTS twins and controls. Excluding infants with pulmonary stenosis (6 recipients and 1 donor) did not change the results.

Conclusions:

TTTS survivors, both recipients and donors, show signs of left ventricular dysfunction at birth. In addition, lower velocities across the aortic artery in donor twins at the first day after birth could indicate poorer cardiac output in these infants. Cardiac function normalized as early as the age of 1 month in the majority of TTTS survivors.