

Prenatal detection of transposition of the great arteries affects mortality and morbidity

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Introduction

Transposition of the great arteries (TGA) is the most common cyanotic congenital heart defect requiring immediate treatment after birth. TGA has an excellent long-term outcome, after arterial switch operation. The pre-operative mortality is, unfortunately, 4 to 6%. A prenatal diagnosis reduces neonatal mortality. TGA is, however, commonly missed during prenatal screening. The study aim was to evaluate the prenatal detection rate of TGA and the effects of prenatal detection on pre- and post-surgical mortality and morbidity.

Methods

In a retrospective cohort study all infants with TGA with intact intraventricular septum or non-significant ventricular septal defect born in a large referral region between 1-1-2002 and 1-1-2012 were included. The cases were divided in two groups: with or without prenatal diagnosis. Pre-surgical morbidity was assessed in terms of; (1) significant cardiovascular compromise, (defined as resuscitation with inotropics and/or oxygen saturation lower than 61%), (2) metabolic acidosis, (pH < 7.1 and/ or lactate > 5.0 mmol/l), (3) multi-organ failure, (abnormal renal and/or hepatic function), (4) closure of the arterial duct before initiation of prostaglandin therapy. Pre- and post-surgical mortality was assessed, follow-up was one year.

Results

Of all cases (n= 103) 25% were prenatally diagnosed, with 44 % prenatal detection in the last five years. All deaths occurred in cases with a postnatal diagnosis (9.1%, with 4.9% pre-surgical mortality). The incidence of closure of the arterial duct before initiation of prostaglandin treatment and renal failure was significantly more common in the postnatal compared to the prenatal group (0% versus 19.7%, p= 0.002 and 0.06% versus 21.7%, p=0.021). Other variables indicating morbidity showed a non-significant trend in favour of prenatal diagnosis (mean ASAT 204.5 versus 60.9, ALAT 90.2 versus 38.7).

Conclusions

This study presents one of the largest cohorts of neonates with TGA assessing morbidity to this extent. First-year mortality is significantly decreased by prenatal diagnosis from 9.1% to 0%, showing that despite modern resuscitation and intensive care for neonates with TGA, a prenatal diagnosis is the best prevention for mortality. Moreover, some morbidity indicators were significantly higher in the postnatal group. These results justify all efforts to improve prenatal screening programs.