Reduction in mortality in readily treatable congenital heart disease not clearly related to timing of diagnosis

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Introduction

- Late diagnosis of critical congenital heart disease (CHD) is associated with increased risk
- We have reported significant preoperative mortality in d-transposition of the great arteries (d-TGA) and critical LV outflow obstruction with two ventricles (LVOTO) in New Zealand infants born 2006 to 2010.1,2
- Information related to changes in patterns of diagnosis and outcome over time may assist the development of strategies to reduce mortality and morbidity

New Zealand

One centre for paediatric cardiac surgery
- widely dispersed population
- ~4.2 million
- Birth rate ~65,000/year

- All newborns are issued with a unique health ID; the National Health Index number (NHI)
- Notification of infant and child death to statutory review committees is a legal requirement

Aims

Compare the outcome of infants born with d-TGA and LVOTO from 2006-10 with those from 2011-14 in relation to mortality risk and timing of diagnosis.

Methods

A population-based retrospective review of critical CHD throughout New Zealand
- Births with d-TGA and LVOTO from 2006-14
- Variables recorded:
  - timing of diagnosis
  - comorbidities
  - intervention
  - survival to 12 months of age
- Case ascertainment:
  - National fetal cardiology database
  - Cardiac surgical database
  - Governmental mortality review committee databases
- Data were matched using the NHI as a unique ID

Results

- There was no significant change in the timing of diagnosis over the two time periods although there was a slight increase in prenatal diagnosis of d-TGA and there were fewer infants discharged with critical LVOTO (Figure 1).
- There was a substantial decrease in 1-year mortality for both d-TGA and LVOTO (Figure 2).
- Postoperative mortality was low, occurred late after surgery and was a consequence of unrelated comorbidity (Figure 3).
- In 2006-10 mortality in d-TGA occurred most often in infants diagnosed after birth, and in LVOTO in those diagnosed after hospital discharge. This was not the case in 2011-14 (Figure 4).

Conclusions

- There has been a dramatic reduction in mortality for D-TGA and LVOTO
- In D-TGA, lower mortality is likely related to an emphasis on delivery at a cardiac centre and rapid identification, stabilisation and transfer of those born elsewhere. Sporadic uptake of oximetry screening may have also contributed
- In LVOTO the cause for the lower mortality is less clear, and may be the result of a reduction in the small number of cases diagnosed after hospital discharge, and improved community awareness

References