

Few risk factors associated with major adverse events following atrial septal defect closure

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Objectives

Atrial septal defect (ASD) is one of the most common congenital heart disease. Adverse effects following ASD closure are rare. The aim of this case-control study was to study neonatal and pre-interventional risk factors for major adverse events up to one year after ASD closure.

Methods

This retrospective case-control study included all children born in Sweden with ASD closure (surgery or percutaneous device closure) in Stockholm and Lund, between the years of 2000-2014. Cases were children with major adverse events and controls were children without major adverse events occurring during and within one year after ASD closure. Data was retrieved from medical records and the Swedish National Birth Register. Conditional logistic regression was performed to evaluate the association between neonatal and peri-interventional risk factors and major adverse events after ASD closure. Maximum-likelihood estimates of the odds ratio (OR) and 95% confidence interval (CI) was obtained, taking into account potential confounders. The analyses were performed for three categories:

- 1_ All ASD closures
- 2_ Children with percutaneous device closures of ASD
- 3_ Children with surgical ASD closure

Results

Overall 413 children underwent ASD closure at the two paediatric cardiac centers, and 49 (12%) of them were cases with major adverse events during and following the closure. The cases were younger, had less body weight and had a larger ASD size-to-weight ratio compared to children with no major adverse events.

There were no neonatal risk factors associated with major adverse events following ASD closure. Pre-interventional cardiopulmonary symptoms was associated with an increased risk of major adverse events for all ASD closures (OR= 2.80 (CI 95% 1.23-6.37), and with an even greater increased risk associated to surgical ASD closure (OR= 4.50 (CI 95% 1.47-13.80). Peri-interventional arrhythmias which needed treatment was the most common major adverse event.

Conclusion

Pre-interventional cardiopulmonary symptoms was associated with an increased risk of major events during and following ASD closure, especially for surgical repair. There were no neonatal risk factors associated major adverse events. These results indicates the necessity of attentive post interventional follow up, maybe even for a longer period of time.