Impact of precision prenatal diagnostic of congenital heart diseases on perinatal and long-term management

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Objective: To evaluate the impact of the precision of prenatal diagnosis of congenital heart diseases (CHD) on perinatal and long-term management.

Methods: Over a period of 10 years, 1258 neonates with a prenatally diagnosed CHD and 189 fetal autopsies after termination of pregnancy were included. Changes in CHD diagnosis were classified as totally different, similar but leading to changes in neonatal management, and similar without changes on initial management. The impact on long-term outcome was considered negative if the final diagnosis was a more complex CHD precluding the planned biventricular repair, or if additional surgical interventions were needed, or if the complexity level of the Aristotle score was increased. Conversely, the impact on outcome was considered positive if biventricular repair was possible while not planned prenatally, or if the number of surgical interventions was reduced, or if the complexity level of the Aristotle score was lower.

Results: In live births, the post-natal diagnosis was imprecise in 30.2% of cases (n=380/1258): completely different in 2.9%, led to changes in initial management in 8%, and did not affect initial management in 19.3%. Imprecision in the prenatal diagnosis had a negative impact on long-term outcome in 62/1258 (4.9%), and a positive impact in 52/1258 (4.1%). In 91% of the cases, no consequence on long-term outcome was observed.

In the fetal autopsy group (mean term 26 weeks, range 10-38), the diagnosis was imprecise in 54.5% of the cases (n=103/189): completely different in 8.5%, could have led to changes in postnatal management in 14.3%, and with minor differences that would not have led to changes in management in 31.7%. In two cases, correcting the CHD diagnosis could have led to continue pregnancy.

In both groups, the most frequent differences were anomalies of the outflow tract anatomy (43%), and the systemic or pulmonary veins (25%).

Conclusion: Imprecision of prenatal diagnosis of CHD changes early management in 11% of the cases, and impacts long-term outcome in 9% of the cases. Improvement of CHD diagnosis for anatomy of the outflow tract and main veins should help to reduce impact on postnatal management and outcome.