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Phrenic nerve palsy and Glenn anastomosis: One center 10 years experience

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Introduction Diaphragmatic paralysis after cardiac surgery due to bilateral phrenic nerve palsy is an important complication especially in infants with Glenn procedure. The best pulmonary condition is a key factor for success in monoventricular palliative surgery. The response of the patient to phrenic nerve palsy may range from an asymptomatic radiographic abnormality to severe pulmonary dysfunction requiring prolonged mechanical ventilation and other associated morbidities and even mortality. Indeed, with a global incidence of 1.6% in most series, Glenn anastomosis appears to be one of the closed heart procedures of high risk of palsy.

Cohort A retrospective case control study was performed in 25 children suffering on bilateral phrenic nerve palsy surgically treated with transthoracic diaphragm plication since 2005, in 1 surgical center. 7 of these patients had Glenn anastomosis. 5 (70%) were less than 1 year old at plication time. 100% of patients had good evolution with discharged of reanimation and are alive. 4 could benefit of totalisation. Mean time before spontaneous breath for these patients was very short (33 hours), as mean ICU hospitalization (3.4 days) and in our hospital (15 days).

Even if early spontaneous recovery after phrenic nerve palsy is rare, it finally occur in 84% of patients and diaphragm plication is safe, even in young patients and don't seems to be an obstacle for Fontan circulation.

Conclusion Diaphragm plication is an effective and safe treatment of diaphragmatic paralysis and can be proposed even in patients with Glenn without deteriorate success possibilities of Fontan circulation.

Conflict of interest The authors have not transmitted any conflicts of interest.

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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 10-year period, 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. 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 The post-natal diagnosis was imprecise in 30.2% of the cases: 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 4.9% of the cases, and a positive impact in 4.1%.

In the fetal autopsy group (mean term 26 weeks), the diagnosis was imprecise in 54.5% of the cases: 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 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.

Conflict of interest The authors have no conflict to declare.

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Prognostic value of invasive hemodynamic parameters in Eisenmenger syndrome

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Usefulness of cardiac catheterization in Eisenmenger syndrome is controversial. We investigated the prognostic value of invasive hemodynamic parameters.

Methods 69 consecutive patients with congenital heart disease and pulmonary vascular resistance (PVR)>8UW.m² (Eisenmenger syndrome, n=63; noncorrectable left-to-right shunt, n=6), with at least 1 catheterization after 1994, were included. Pulmonary artery pressures (PAP) and oxygen (O_2) consumption were measured using the same standardized method. PVR were calculated using the Fick principle. Outcome was assessed in 2015 and survival analysis was performed.

Results Mean age at first catheterization with this protocol was 38.4±13.3 y.o.. Pre-tricuspid, post-tricuspid and combined shunts were observed in 44 (63.8%), 23 (33.3%) and 2 (2.9%) cases. Patients were free of any pulmonary anti-hypertensive drugs in 54 (78.3%) cases. A Who status 3 or 4 was observed in 37 patients (53.6%). Median PVR and diastolic PAP were 24.6 [19.2-37.6] UW.m² and 40.0 mmHg [34.5-50]. There was no complication. During a median follow-up of 7.2 y. [5.2-11.6], 23 (33.3%) patients reached a composite outcome criteria (death n=12; heart-lung transplantation n=8; transplantation list registration n=7). Outcome was associated with pulmonary O_2 sat. <70% (p=0.01), aortic O_2 sat. ≤88% (p=0.02), mixed venous blood O_2 sat. ≤65% (p=0.01), PVR ≥30UW.m² (p=0.02), diastolic PAP ≥45mmHg (p=0.01) and who 3-4 (p=0.01). After adjustment for the position of the shunt and the number of anti-hypertensive drugs, diastolic PAP 45mmHg and Who 3-4 remained associated with outcome in Cox regression analysis (HR 5.6, p=0.006; HR=5.3, p=0.008). There were trends that did not reach significance for the other hemodynamic parameters.

Conclusion In addition to functional status, first catheterization provides prognostic information in patients with Eisenmenger syndrome. If these information could improve the therapeutic algorithm remains to be demonstrated.

Conflict of interest The authors have not transmitted any conflicts of interest.