

Critical aortic stenosis at risk of hypoplastic left ventricle:has the time come for in utero fetal intervention?

Marantz.P(1), Peña. G (1), Aiello .H (1),Trentacoste. L(1), Granja M (1), Izbizki G (1), Azancot A (2), Otaño L(1).

(1)Hospital italiano,Fetal and Pediatric cardiology , Buenos aires,Argentina.

(2) Hôpital Robert Debré ,Fetal and Perinatal Cardiology,Paris,France.

Objectives: Patients at risk of evolution to hypoplastic left ventricle (HPLV) could present at the time of prenatal diagnosis with a small left ventricle (LV) or with dilated LV with critical severe aortic stenosis and signs of progression towards hypoplasia. Could aortic valvuloplasty prevent evolution towards HPLV?

Methods: between January 2000 and January 2011 in our tertiary center, 16 fetuses with severe aortic stenosis were considered to be at risk of HPLV: foramen oval left to right flow, ductal retrograde and monophasic mitral flow, insufficient growth of mitral and aortic annulus. Pts were divided into two groups: Group A: 11 fetuses without fetal intervention, and Group B: 5 fetuses who underwent fetal percutaneous ultrasound-guided aortic valvuloplasty between the 21st and 29th weeks of gestation.

Results: Group A: The 11 fetuses evolved as HPLV .

Group B: The first procedure was performed at 25 weeks of gestation, but with a LV/RV ratio of 0.70; the baby was born as HPLV. The other 4 cases were performed between 21 and 29 weeks of gestation (x: 23) with a LV/RV ratio ≥ 1 ; all of them maintained LV size, but case 2 and 3 failed to recover LV contractility. In the second case parents decided to interrupt pregnancy. Case 4 and 5 showed gradual improvement of the LV contractility during the pregnancy. Last 3 cases were born biventricular and an aortic valvuloplasty was performed the 1st day of life with immediate improvement of LV contractility and a significant increase in aortic flow.

Conclusion. Fetal aortic valvuloplasty could offer a possibility for biventricular repair, however we draw two comments: multicenter studies should offer a large number of patients. The first trimester evolutionary study of the fetal heart may help our knowledge to detect when is the time to perform.