

Prenatal diagnosis of fetal aortic coarctation.

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OBJECTIVES: Prenatal diagnosis of fetal aortic coarctation (AoCo) is mainly suspected when cardiac ventricular or great vessels disproportion is encountered on prenatal ultrasound. Prenatal counseling remains challenging because of the lack of specificity of these criteria. The aim of this study was to evaluate the detection rate of fetal AoCo according to these criteria and to determine echocardiographic features associated with this diagnosis.

METHODS: In this retrospective study, we reviewed the chart of 85 fetus referred for cardiac ventricular or great vessels disproportion between January 2010 and December 2015. 63 fetus were excluded because of hypoplastic left ventricle, complexe heart disease, interruption of the aortic arch. 37 fetus were included for suspicion of isolated AoCo and noted their postnatal follow-up. We compared the subject with and without AoCo. We analysed the right/left ventricular (RV/LV) diameters ratio, main pulmonary artery/ascending aorta (MPA/AAo) diameters ratio, ductus arteriosus/aortic isthmus (DA/AOI) diameters ratio, presence of reverse flow in the aorta, persistent left superior vena cava, ventricular septal defect, bicuspid aortic valve. The postnatal follow up included the ultrasound data, timing of the surgery and the surgical approach.

RESULTS: The AoCo was confirmed postnatally in 19 neonates (51,4%), all requiring surgical treatment in the neonatal period 7 days after birth on average (2 days- 18 days). Significant statistical differences ($p=0,005$) were found when the diagnosis was suspected during the second trimester ultrasound scan ($p=0,005$), when there was a reverse flow in the aorta (21,1% vs 0% $p=0,039$) and the RV/LF diameters ratio was significantly higher in case of coarctation at the third trimestre (1,82 vs 1,30 $p<0,001$). There was no significant difference for the RV/LF diameters ratio at the second trimester ($p=0,183$), the MPA/AAo diameters ratio ($p=0,132$), the DA/AOI diameters ratio ($p=0,079$), the ventricular septal defect, the persistent left superior vena cava, and the prenatal diagnosis of bicuspid aortic valve.

CONCLUSION: Cardiac ventricular or great vessels disproportion is not a specific sign for the prenatal diagnostic of aortic coarctation. Further studies are needed to build prediction models integrating different ultrasound signs in order to improve the antenatal detection of this anomaly.