

THE FETAL HEART IN MONOCHORIONIC TWIN PREGNANCIES: HOW MUCH ARE WE MISSING ?

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INTRODUCTION: TWIN PREGNANCIES HAVE AN INCREASED RISK OF CARDIAC STRUCTURAL AND FUNCTIONAL ABNORMALITIES COMPARED WITH SINGLETON PREGNANCIES. THIS RISK APPEARS TO BE EVEN GREATER WHEN WE REFER TO MONOCHORIONIC PREGNANCIES. THE AIM OF THIS RETROSPECTIVE STUDY IS TO REVIEW THE INCIDENCE OF CARDIAC DISEASE IN A POPULATION OF MONOCHORIONIC TWINS.

METHODS: RETROSPECTIVE REVIEW OF ALL MONOCHORIONIC TWIN PREGNANCIES REFERRED FOR A FETAL CARDIAC SCAN IN OUR INSTITUTION. DATA ABOUT GESTATIONAL AGE AND CARDIAC DIAGNOSIS WAS REVIEWED. CHORIONICITY AND TYPE OF CORDAL INSERTION WAS CONFIRMED THROUGH THE HISTOLOGIC ANALYSIS OF THE PLACENTA.

RESULTS

BETWEEN JANUARY 2007 AND DECEMBER 2010, 3803 FETAL CARDIAC SCANS WERE PERFORMED IN OUR DEPARTMENT. OF THESE, 166 WERE MONOCHORIONIC TWIN PREGNANCIES. IN 12 (7.2%) OF THESE THERE WAS A DIAGNOSIS OF CONGENITAL HEART DISEASE IN ONE OF THE TWINS. THE MEDIAN GESTATIONAL AGE WAS 28 WEEKS (MINIMUM 21, MAXIMUM 31).

CARDIAC DIAGNOSIS

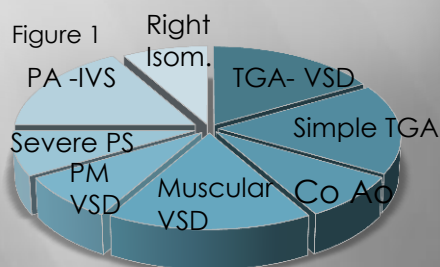


Table 1

| Diagnosis | n | TITS | Cord insertion* |
|--|-----------|-------------|---------------------|
| TGA with VSD | 2 | No | Velamentous |
| Simple TGA | 2 | No | Central/Paracentral |
| Pulmonary atresia IVS | 2 | Yes (laser) | Central |
| Muscular VSD | 2 | No | Central/Marginal |
| Perimembranous VSD | 1 | No | Marginal |
| Severe valvular pulmonary stenosis | 1 | Yes (laser) | Central |
| Aortic stenosis and aortic coarctation | 1 | No | Velamentous |
| Right isomerism and complete AVSD | 1 | No | Paracentral |
| Total | 12 | 3 | |

Figure 1 and Table 1- Cardiac diagnosis in monochorionic twins.

TGA- transposition of the great arteries, VSD- ventricular septal defect, Co Ao – coarctation of the aorta, PM- perimembranous, PS- Pulmonary stenosis, PA- IVS – Pulmonary atresia with intact ventricular septum, AVSD- auriculo-ventricular septal defect, TITS- twin to twin transfusion syndrome, * no information about cord insertion in one pair of twins

CORD INSERTION

| Type of cord insertion | n |
|------------------------|------------|
| Central | 12 |
| Marginal | 4 |
| Velamentous | 3 |
| Total | 19* |

Table 2- Cord insertion in monochorionic twins. * In one case selective fetocide was performed and in two cases information about cord insertion was not available.

CONCLUSIONS: DURING THE PERIOD OF THE STUDY, THE INCIDENCE OF CARDIAC DISEASE IN OUR POPULATION OF MONOCHORIONIC TWINS APPEARS SIGNIFICANT. THE REASON FOR THESE DIFFERENT CARDIAC MALFORMATIONS IS NOT YET CLEAR, BUT ONE MAY SPECULATE THAT HEMODYNAMIC IMBALANCE BASED ON A SINGLE PLACENTA WITH ANATOMOSES IS A FREQUENT EVENT AND MAY CONTRIBUTE TO THE "REMODELING" OF CARDIAC ANATOMY.