

# Maternal and fetal outcomes in Cyanotic Congenital Heart Disease: a multicentric study of 71 pregnancies.

Magalie Ladouceur, Louise Benoit, Adeline Basquin,  
Jelena Radojevic, Quentin Huet, Sébastien Hascoet,  
Pamela Mocerri, Lauriane Legloan, Charlene Bredy,  
Hugue Lucron, Marielle Gouton, Jacky Nizard.  
France



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# Background

- Some cyanotic CHD are deemed unsuitable for radical repair but are compatible with survival.
- Pregnancy in cyanotic CHD patients is associated with a great maternal and fetal risk.
- Improvement of high-risk pregnancies management:
  - earlier recognition of the underlying disease,
  - improved understanding of cardiopulmonary physiopathology,
  - obstetrical/anaesthetic management,
  - introduction of a multidisciplinary approach.
- Aim : to determine if the **contemporary approach** to pregnancy and cyanotic CHD has had an impact on outcome.

# Methods

- 31 patients with cyanotic CHD had 71 pregnancies
  - from 1994 to 2015, 11 French tertiary centers (M3C)
  - excluding CHD associated with PAH
  - All known pregnancies
- CHD were clustered in 4 groups
  - Group 1: Tetralogy of Fallot or pulmonary atresia with aortopulmonary collaterals, n=7
  - Group 2: Univentricular Heart, n=18
  - Group 3: systemic RV, n=4
  - Group 4: Ebstein's anomaly and atrial septal defect, n=2
- outcomes :
  - maternal cardiac and obstetrical complications:
  - Fetal/neonatal complications
- Predictive factors

# Maternal outcomes

- No maternal death
- Cardiovascular complications occurred in 10 patients (32%)

Cardio-vascular event	n	term
Hypoxemia (saturation decrease >5%)	7	26 to 29 WG and postpartum
Heart failure	4	1st trimester , 3rd trimestre and post-partum
De novo atrial arrhythmia	2	2 <sup>nd</sup> and 3 <sup>rd</sup> trimester
Infective endocarditis (no preventive ATB)	1	postpartum
Thrombo-embolic complications	0	—

25% of pregnancies were treated by anticoagulation therapy  
11% were treated by preventive antibiotic therapy

# Fetal/neonatal outcomes

Variables, n	group 1, 7	group 2, 18	group 3, 4	group 4, 2	total, 31
pregnancies, n	14	38	12	2	66
Miscarriages, n (%)	1 (7%)	12 (33%)	4 (33%)	0 (0%)	17 (26%)
Live births, n (%)	13 (93%)	24 (65%)	8 (67%)	2 (100%)	47 (71%)
Birth weight, mean±SD, mg	1924±730	1869±728	2100±523	1990	1906±633
term, mean±SD, WG	33.5±4.3	33.6±2.6	32.4±3.2	35.5±2.1	33.5±3.2
Prematurity, n (%)	10 (77%)	21(88%)	8 (100%)	1(50%)	40 (85%)
SGA, n (%)	2 (15%)	9 (38%)	1 (12.5%)	1(50%)	13(28%)
APGAR at 5 min=10, n/n' available data (%)	1/3	16/19	2/3	0/1	19/26 (73%)
NICU hospitalization	8/13	9/24	3/8	0	20/43 (47%)
neonatal death, n	2	1	1	1	5/47 (11%)

One congenital vertebral anomaly  
No CHD was diagnosed before and after birth

# Predictive factors

- No factor was predictive of maternal complications
- Miscarriages tended to be more frequent in group 2 compared to group 1 (33% vs. 7%,  $p=0.07$ )
- No factor was predictive of prematurity
- SGA was significantly associated with maternal saturation before pregnancy: 88% vs. 90 ( $p=0.04$ ).
- SGA tended to be associated with impaired NYHA functional class ( $p=0.07$ )

# Conclusion: pregnancy in cyanotic CHD

- Profile changing of pregnant women with cyanotic CHD (univentricular heart)
- Low maternal risk.
- Increase in live birth rate (71% vs. 46%)<sup>1</sup>
- But, high incidence of fetal and neonatal complications:
  - Premature birth (85% vs. 37%)<sup>1</sup>
  - SGA neonates (28%)
  - Neonatal death (11% vs. 14%)<sup>1</sup>
- Close fetal monitoring and management in referral centers are required in this complex cardiac condition.

