Fetal Red Cell Transfusion: Annual Experience of the French National Reference Center in Perinatal Hemobiology

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Background

The French "Centre National de Référence en Hémobiologie Périnatale" (CNRHP) is dedicated to biological and clinical diagnosis and treatment of feto-maternal red blood cells incompatibilities. Since the introduction of RhD prophylaxis in the 70s, they are rare but may still induce severe fetal anemia requiring fetal transfusions. In the Center, severe immunisations during pregnancy are referred and followed biologically (dosage and titers of antibodies) and clinically using repetitive measurements of the systolic peak in the middle cerebral artery allowing early diagnosis of fetal anemia.

Method

To report the experience of the Reference Center in fetal transfusions for the last year, we performed a retrospective analysis of our transfusion register between the January, 1st,2008 and the December, 30th, 2008.

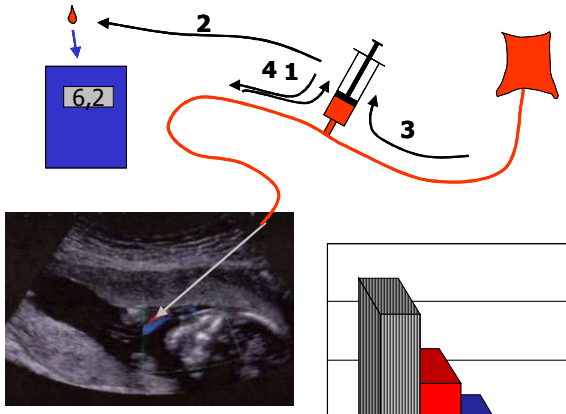
Results

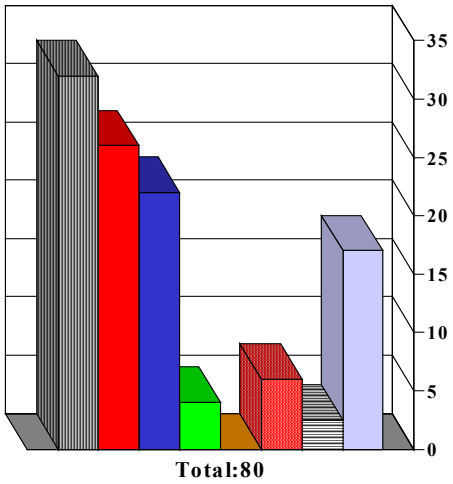
Eighty fetal transfusions were performed (79 through umbilical cord and one intraperitoneal at 17 weeks GA) in 32 pregnant women.
The average number of transfusions per pregnancy was 2.5 with a maximum of 8 for one, (first one at 17 weeks).
The latest transfusion, if needed, is planed around 34 weeks in order to avoid premature birth because of anemia.

The rules of blood choice for fetal transfusion is determination of extensive phenotype in mothers. Three over 32, developed new antibodies when the required phenotype could not be reached: 2 anti-JK1 and one anti-FY1 (no availability of required blood) and one anti-MNS3 despite transfusion of compatible blood.

Origin of fetal anemia was feto-maternal incompatibilities in 26 cases: RH1 :22 and KEL1:4; non immune fetal anemia in 6 cases with one feto-maternal hemorrhage and 4 parvovirus infections; one anemic hydrops was complicated by death in utero without cause. One twin pregnancy required fetal transfusion in only one of the two babies (KEL1 incompatibility).

All of these women but 1, gave birth to alive babies. Twenty nine delivered at 36 weeks GA or later and no baby had respiratory distress. Among the premature babies, one was extracted right after the third fetal transfusion for recurrent feto-maternal hemorrhage to prepare neonatal adaptation.
Only three babies over the 33 required a transfusion within the first day of life and only one an exchange transfusion for hyperbilirubinemia. All the children required transfusions during the 3 first months. None developed blood immunisation nor transfusion induced infection. None had any neurological abnormality.





Total:80

Nb of women	32
Immune	26
RH1	22
KEL1	4
other antibodies	0
non immune	6
Nb TS/woman	2,5
regional residency	17

Conclusions

In France, based on the experience of our reference center RH1 incompatibility remains the major cause of fetal anemia. Respect of the extensive phenotype of the mother for blood choice before fetal transfusion is necessary to avoid further maternal immunisation. Last fetal transfusion at 34 weeks allows good outcome of babies with almost no birth before 36 weeks and no need of emergency postnatal transfusion.