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Pregnancy in Infertile Patients: Obstetric and Perinatal Results

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Summary

We studied a total of 288 infertile women, of which 101 got pregnant spontaneously (SPS), and the rest, 187 women did so after assisted reproduction technique (SPART). The groups did not show differences, though they did in the etiology of infertility, being the cervical (χ_1^2 : 4.329^b) and hormonal (χ_1^2 : 4.019^b) factors more frequent in the SPS group. The progress of the gestation was similar (NS). The gestational age at delivery being earlier in the SPART group (38.11 weeks against 39.65) ($p < 0.05$, T_{211} : 3.657). The amniotic liquid was tainted in the 8.5% of the SPS and in the 3% of the second group (χ_1^2 3.963^b, $p < 0.05$). The cesarean section was 51% in the SPART group against 28.7%, ($p < 0.05$, χ_2^2 : 13.834). Also birth weight was inferior in SPART group babies (2.886 vs 3.363) ($p < 0.05$, T_{231} : 5200), the sex ratio was similar and the Apgar score did not show differences.

Introduction

The birth of the first baby conceived through in vitro fertilisation (IVF) took place 23 years ago. From then on there have been various improvements in assisted reproduction techniques (ART) and the number of babies obtained with their help has increased. These treatments however present a series of important problems, consisting on one hand of a high rate of multiple pregnancies, that could lead to adverse perinatal results producing a diversity of paediatric complications, and on the other, considering that the population submitted to assisted reproduction techniques, normally of

higher age than the non-sterile population, will thus have an increasing risk of abortions and new-borns suffering abnormal karyotype (1, 2).

There is a greater number of obstetric complications, some of which require hospitalisation like uterine bleeding or hypertension, as well as multiple pregnancies, early of later abortion, prematurity, low birth weight, intrauterine fetal death, and permanent defects like cerebral paralysis or necrotising enterocolitis (3).

The incidence of preterm births is 25%, in case of twins reaching 56% and up to 92% in triplet pregnancies and we see a similar rate in the number of caesareans, 46% in single pregnancies, increasing up till 92% in triplets (4). Daniel, who compared spontaneous twin pregnancies with ART twin pregnancies determined that a great complication risk existed during ART gestation. (5). Other authors however have not found any differences in prematurity nor in birth weight of IVF babies, in comparison with the non-infertile population, considering the patients characteristics and the multiple pregnancies the most important reasons for the IVF risk, prevailing over ART (6).

Material and Methods

A retrospective study was done among a total of 288 infertile patients, who got pregnant and were attended to at the Human Reproduction Unit of the Canarias University Hospital. This group was divided into two, on one side 101 infertile patients with spontaneous pregnancies (SPS), 35.1% of the group, and on the other 187 infertile women that got pregnant after the application of some sort of assisted reproduction technique (SPART) being 64.9% of the investigated population.

Both groups were followed every trimester of the pregnancy, paying special attention to the existing pathology, the final and the perinatal results related with weight and Apgar score.

The statistic analysis was performed with the statistic packet SPSS 10.0.2. the proportion contrasts with Pearson's χ^2 and the comparisons of averages with the Student's T test and the significant contrasts are under 0.05.

Results

The patients of the first group (SPS) were between 22 and 45 years of age, with an average of 32.63 years. 70.3% did not have any significant medical antecedents, among the rest 12.9% were smokers, 1% suffered from bronchial asthma, thyroid or lung disease both 1%, heart disease 3%, obesity 1% and anti corpus Hepatitis B positive among 1%. Surgical antecedents were present in 31.6% of them, of which 30,9% were minor, 8%

of them major interventions, among which 7% of the latter were mammary reductions and 1% were laparotomies 1%. Some of these operations were done on the same patient.

They presented an average of 4.82 years of infertility, being primary in 76.9% and secondary in 10%, one pregnancy loss alone in 10% or with a lived born baby in 1.06%, and recurrent abortion in 1.98%, and with the following ethiology: cervical factor in 8.9%, uterine in 10.89%, tubular in 13.9%, ovular in 28.7%, of which the hormonal was 6.9% and masculine in 19.8%. All the pregnancy was singleton.

In the second group (SPART) the patients were between 22 and 40 years of age, with an average of 31.55 years. 70.6% did not have any significant medical antecedents. 12.2% were smokers, anti corpus Hepatitis B positive in 3.2%, bronchial asthma in 1.6%, hyper-prolactinemy in 0.5%, thyroid diseases in 2.1%, heart disease in 4.7%, and depressions or anxiousness in 0.5%. Obesity and rheumatoid arthritis were detected in the same proportion in 0.5% of them. 26.2% claimed to have surgical antecedents of which 23.3% were minor interventions, and 13.2% major, like mammary reductions in 9% and traumatological interventions in 4.2%.

They had suffered from an average of 5 years of infertility, being primary in 90.94% and secondary in 1.06%, one pregnancy loss alone in 5.88% or with a lived born baby in 1.06% and recurrent abortion in 1.06%, the ethiology was: cervical factor in 3.2%, uterine in 5.88%, tubular in 10.7%, ovular in 18.1%, with an hormonal incidence of 2,1% and masculine in 25.7%. Pregnancies after a artificial insemination among 24.6% and by donor in 12.8%. IVF was applied in 34.7%, intracitoplasmatic sperm injection in 10.7% and ovum donation in 3.2% of these pregnant women. The incidence of twin pregnancy was 19.25% and triplets 1.6%.

The populations were homogenous, we however did detect a mayor presence of the cervical (χ_1^2 : 4.319^b, $p < 0.05$) and hormonal factors (χ_1^2 : 4.099^b, $p < 0.05$) in the group of spontaneous pregnancies.

In the SPS group, the course of the first trimester of pregnancy was physiologic in 77.1%, presenting uterine bleeding in 8.6%, hyperemesis in 7.1%, urine infection in 4.3% and hyper-prolactinemy in 1.4%. The second trimester was physiologic in 92.8% of them, highlighting the realisation of a cerclage and urine infection in 1.4%. The third trimester progressed in a normal way among 76.8% of the women of this group, with uterine bleeding and retarded uterine growth, premature membrane rupture and pyelonephritis in 2.9% and with the same frequency of 1.4% gestational diabetes, oligoamnios, nephritic colic, arterial hypertension and hydramnios were detected.

Among the patients of the SPART group the first trimester was normal in 81.7%, with twin pregnancy in 19.25% and triplets in 1.6%. As com-

plications uterine bleeding in 12.5% and with a proportion of 1.9% we found the ovaric hyperstimulation syndrome, hyperemésis, urine infection, vanishing embryo in a twin pregnancy and salpingectomy because of ectopic pregnancy and oophorectomy caused by ovaric torsion, while the rest of the complications represented less than 1%. The second trimester progressed in a physiologic way in 87%, requiring cerclage en 5% of them, in 2% existed menace of premature labour, also in 2% foetus-foetal transfusion with fetal death, showing in 1% gestational diabetes, arterial hypertension or urine infection. The course of the third trimester was physiologic in 57.4%, with menace of preterm labor in 12.9% cases-live born, but in 7.3% patients, in relation with multiple pregnancy, oligoamnios and premature membrane rupture in 5%, pregnancy diabetes in 4%, and arterial hypertension, pre-eclampsia and fetal compromise through fetus-fetal transfusion in 2%.

There are not statistical differences in the obstetric course between both groups (NS).

Mean gestational age at delivery was 39.65 weeks in the SPS group, against 38.11 in the SPART group ($p < 0.05$, T_{211} : 3.657). The amniotic liquid was tainted in 8.5% of the first group and in 3% of the second, more often in the spontaneous pregnancies (χ^2_1 : 3.963^b, $p < 0.05$). In the SPS group 75.24% was vaginal delivery, eutocic was 68.42% and forceps in 31.57% and 24.75% required caesarean section. Among the SPART group vaginal delivery was in 49%, 36.1% eutocic and forceps in 12.9%. Caesarean section were used on 51% of this patients ($p < 0.05$, χ^2_2 : 13.834), 17.81% in multiple pregnancy and electives in 34.73%.

The pH blood cord was 7.22 both groups (NS).

Among babies from the SPS group 53.41% was a boy against 59.46% in the SPART group (NS). The mean birth weight in the SPS was 3.363 grams, whilst SPART babies weighted 2.886 grams, showing statistically significant differences ($p < 0.05$, T_{211} : 5.200).

The Apgar score of < 7 at 5 minutes in SPS group was 3.96 and in the SPART was 7.48 (NS).

Conclusions

Neither the spontaneous pregnancy group and the SPART group showed differences, though we did detect more frequent hormonal and cervical factors among the SPS patients, for these irregularities can be medically corrected, and the patients can get pregnant without the use of ART.

Evaluating the cours of the gestation, during the first trimester we did not find any significant differences (NS), although uterine bleeding was twice as frequent in the SPART group. The second trimester progressed

in a normal way for the two groups, though the SPART patients needed 5 times more profilactic cerclages, only one fetal death because of fetofetal transfusion, all related with multiple pregnancies, and with maternal complications like gestational diabetes and hypertension (NS). In the third trimester the SPART pregnancies had, so menace preterm delivery occurred in 7.3% females with twin pregnancies and one triplets, more often than among the SPS patients and premature membrane rupture in 5%, fetal compromise caused by fetofetal transfusion and maternal complications like arterial hypertension and preeclampsia. (NS).

We however detected statistically significant differences in the gestational age at delivery, the SPART group being earlier, which is quite understandable because of a higher rate of multiple pregnancies, which induce to preterm deliveries. For this same reason the newborns had a lower birthweight and a significant higher number of caesarean sections was done. We have found that in the infertile population of this study, ART induced pregnancies show no significative differences in obstetric course, delivery starting earlier, increasing number of caesarean sections and lower birthweight.

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