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PERIVITELLINE SPACE ABNORMALITIES IN THE OOCYTE COHORT REDUCES IMPLANTATION AND PREGNANCY RATES IN INTRACYTOPLASMIC SPERM INJECTION CYCLES

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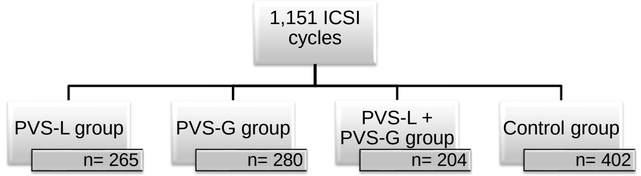
INTRODUCTION

Perivitelline space (PVS) abnormalities are amongst the most prevalent dysmorphisms of the oocyte extracytoplasmic component. Large PVS (PVS-L) and presence of PVS granularity (PVS-G) are repeatedly seen in retrieved oocytes of the same cohort and have already been used as parameters in mathematical models to predict embryo quality, although the effects on implantation and pregnancy rates remain unclear. In most cycles, morphologically abnormal oocytes are harvested together with oocytes free of morphological abnormalities, making it difficult to determine the origin and consequences of such characteristics. For a meaningful interpretation of pregnancy outcomes, the ideal study design should include only cycles with single embryo transfers, or cycles in which the entire oocyte cohort is affected by a given dysmorphism.

OBJECTIVE

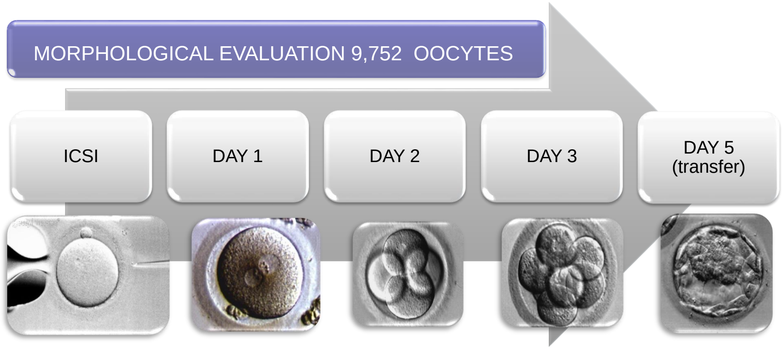
To study the effect of PVS-L and PVS-G, isolated and/or combined, on embryo quality and ICSI outcomes, in cycles in which the entire oocyte cohort was affected.

MATERIALS AND METHODS



Private university affiliated IVF center

June/2010 to August/2016



General Linear Models adjusted for potential confounders were used to investigate the influence of PVS abnormalities on:

- Ovarian response to COS
- Embryo quality on days 2 and 3
- Blastocyst formation
- Implantation rate
- Clinical pregnancy rate
- Miscarriage rate

RESULTS

Groups with PVS abnormalities (PVS-L, PVS-G and PVS-L+PVS-G) presented lower estradiol level, number of follicles, oocytes end embryos compared to control group (Table 1). No differences on embryo quality and blastocyst formation were observed, although implantation and pregnancy rates were significantly lower in PVS-L+PVS-G combined group (Table 2).

Table 1- Descriptive statistics of laboratorial outcomes.

	PVS-L	PVS-G	PVS-L + PVS-G	control	p
Total dose FSH (IU)	2609.08 ± 164.58	2419.69 ± 62.01	2609.12 ± 71.21	2475.61 ± 51.46	0.198
Estradiol level (pg/ml)	1038.85 ± 247.17 [a]	2260.42 ± 159.08 [b]	1953.35 ± 189.73 [b]	2371.55 ± 129.44 [b]	**<0.001**
Follicles (n)	9.47 ± 4.53 [b]	13.93 ± 1.00 [b]	11.57 ± 1.13 [b]	17.89 ± 0.98 [a]	**<0.001**
Oocytes (n)	4.97 ± 2.71 [b]	7.87 ± 0.63 [b]	6.52 ± 0.71 [b]	12.19 ± 0.74 [a]	**<0.001**
Embryos obtained (n)	4.18 ± 0.63[b]	6.57 ± 2.53[b]	4.96 ± 0.72[b]	9.74 ± 0.41[a]	**0.002**

Table 2- Descriptive statistics of clinical outcomes.

	PVS-L	PVS-G	PVS-L + PVS-G	control	p
Implantation rate	17.62 ± 2.33 [b]	17.24 ± 3.83 [b]	15.61 ± 2.33 [a]	20.81 ± 2.94 [b]	**0.044**
Pregnancy rate	27.9% [b]	30.6% [b]	18.1% [a]	33.7% [b]	**0.004**
Miscarriage rate	9.1%	7.8%	10.2%	7.3%	0.962

CONCLUSIONS

Cycles in which the entire oocyte cohort is affected with both large PVS and PVS granularity have compromised implantation and pregnancy rates.