

### Introduction

#### Background:

There is a well-known negative impact of maternal age in the outcome of Assisted Reproductive Technology (ART). However, the influence of paternal age is still a challenge full of controversial studies.

Male age has been implicated in reducing the rates of ART fertilization, implantation, pregnancy, and live birth although these results are not found consistently. The molecular mechanisms of these negative effects are still poorly understood, some authors reports:

- Impaired sperm parameters (reduced volume, concentration, sperm motility, and possibly normal morphology)
- Methylation defects in sperm and telomere shortening

There is an increasing interest concerning the negative effect of female ageing on the DNA repair capacity of oocytes fertilized by spermatozoa with controlled levels of DNA damage.

Aim	To evaluate the influence of male age in the outcomes of In Vitro Fertilization (IVF) and Intrauterine Insemination (IUI)		
Outcomes	1) Clinical pregnancy rate	2) Abortion rate	3) Delivery rate

### Material and Methods

Retrospective analysis of data collected prospectively, referring to IUI cycles (n = 642) since January 2014 until June 2019 and IVF cycles (n = 533) from January 2013 to June 2019, in a tertiary center.

The exclusion criteria for this study were male infertility, female smoking and/or uterine malformations.

The couples were divided in 4 groups:

	Female <35 y	Female ≥ 35y	
Male <40 y	Group A	Group B	<ul style="list-style-type: none"> <li>- Maximum female age:                             <ul style="list-style-type: none"> <li>. 40 years in IVF</li> <li>. 42 years in IUI</li> </ul> </li> <li>- Median male age in the group of men ≥40 years                             <ul style="list-style-type: none"> <li>. 42 years [max. 58] for IVF</li> <li>. 42 years [max. 57] for IUI.</li> </ul> </li> </ul>
Male ≥ 40 y	Group C	Group D	

The rates of clinical pregnancy, abortion and delivery were evaluated separately for IUI and IVF cycles.

For data analysis, SPSS® Statistics and GraphPad were used. The correlation factor between male age, adjusted for female age, was assessed using binary logistic regression. The comparison between the outcomes in the subgroups was performed using the Fisher's exact test (two-tailed).

### Results

- In IUI, the clinical pregnancy, abortion and delivery rates were similar in all subgroups.

	IUI					
	Female <35 years			Female ≥35 years		
	Men < 40 years	Men ≥ 40 years	P-value	Men < 40 years	Men ≥ 40 years	P-value
Clinical Pregnancy	n=166	n=105	0,6901	n=190	n=136	0,076
Abortion	11,4 %	9,5 %		13,6 %	7,3 %	
Delivery	1,8 %	1 %	1	3,6 %	2,9 %	0,45
	9,6 %	8,5 %	0,2884	10 %	4,4 %	0,0896

- In the IVF outcomes, we found a negative association between male higher age (≥40 years) and clinical pregnancy rate (46% vs 34%, p = 0.032) and also the delivery rate (66% vs 23%, p = 0.03), only in the subgroup of women aged ≥35.

	IVF					
	Female <35 years			Female ≥35 years		
	Men <40 years	Men ≥40 years	P-value	Men < 40 years	Men ≥ 40 years	P-value
Clinical Pregnancy	n=90	n=85	0,230	n=188	n=116	0,0316
Abortion	48,9 %	38,8 %		46,3 %	33,6%	
Delivery	16 %	12 %	0,7493	24 %	31 %	0,5119
	41.1 %	34 %	0,3539	66 %	23,2 %	0,0303

### Conclusion

In our study, male age did not influence the outcomes of IVF and IUI when female age was <35 years. However, in the subpopulation of women aged ≥35 years, there appears to be a negative synergistic effect of advanced male age in IVF clinical outcomes.

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