DOES TOBACCO AFFECT FOLLICULAR HEALTH?

Alonso, Manuela[1]; Castro, Estefanía[1]; Pacheco, Alberto[1]; Cruz, María[2]; Bronet, Fernando[1]; Agudo, David[1]

[1]IVI Madrid, Spain, [2]IVI RMA, Spain

Abstract Body

Tobacco contains more than 4000 substances, many of them with a toxic effect that could affect the physiology of the follicular environment, which could result in an affectation of the oocyte quality and therefore of the embryonic quality and the results of an assisted reproduction treatment.
We compared implantation rate, apoptosis and necrosis in cumulus cells and follicular fluid cells in smoking and non-smoking egg donors.
Our target population was 216 oocyte donors. They were classified in three groups. Group I: 79 non-smokers, Group II: 82 smokers donors of 1-10 cigarettes per day, Group III: 54 smoking donors of more than 10 cigarettes per day.
We measured apoptosis and necrosis in cumulus and follicular fluid cells using flow cytometry. In addition, we compared the cumulative implantation rate (until pregnancy with positive fetal heartbeat or until there were no embryos to transfer in case of not getting pregnancy). We perform an ANOVA statistical analysis to analyze the data.
When we compare the cumulative implantation rate, we observed a lower cumulative implantation tate in the groups of donors who smoked (group II=54.31% and group III=55.69%) compared to the group I=65.03%. However, the differences found were not statistically significant, ($p = 0.07$).
When we compare apoptosis and necrosis, we found significant differences in necrosis in cells of the cumulus and in granulosa cells, being higher in group III (necrosis in cumulus=0.53% and granulosa cells 0.55%), than in group I and II (group I: necrosis in cumulus=0.35% and granulosa cells 0.36%), (group II: necrosis in cumulus=0.23% and granulosa cells 0.33%), with p value of 0.05 and 0.011 respectively.
These results could indicate that the smoking could reduce accumulated implantation rates, because the higher rate of necrosis found in cumulus an follicular fluid cells of donors who smoked, which could indicate a toxic follicular environment in this type of smokers oocyte donors.