

MATERNAL BODY MASS INDEX HAS NO IMPACT ON BLASTOCYST EUPLOIDY OR ONGOING PREGNANCY: A RETROSPECTIVE STUDY OF 680 PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDIES CYCLES

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INTRODUCTION

Maternal obesity is widely associated with negative effects on both natural and assisted reproduction, regardless of ovulatory function. It has been linked to higher risks of miscarriage, preeclampsia, preterm birth, and gestational diabetes. However, its impact on embryo developmental competence and clinical outcomes remains a subject of debate. While some studies suggest a detrimental effect of high maternal BMI, particularly on embryo quality, others do not support a clear association. In particular, the relationship between maternal BMI and blastocyst euploidy rate remains controversial, with conflicting evidence and no definitive consensus in the literature

AIM OF STUDY

This study. aims to assess the association between maternal BMI and blastocyst euploidy rate, as well as its impact on ongoing pregnancy rates following the transfer of euploid blastocysts in preimplantation genetic testing for aneuploidies (PGT-A) cycles.

CONCLUSIONS

Our findings indicate that maternal BMI does not affect blastocyst euploidy or ongoing pregnancy rates in PGT-A cycles. These results provide reassurance that overweight and obesity do not compromise embryo chromosomal integrity or implantation potential. However, BMI is a limited indicator, reflecting neither body composition nor parameters such as insulin resistance or body fat distribution, which could impact oocyte quality and endometrial receptivity. Future studies should explore more sensitive metrics to assess body fat mass and distribution, especially the mechanisms leading to lipotoxicity.

ANALYSES AND RESULTSES

A total of 680 PGT-A cycles from January 2019 to November 2024. Patients were classified into four groups based on (WHO) BMI categories: underweight (n=48, 177 embryos), normal weight (n=513, 1820 embryos), overweight (n=89, 289 embryos), and obese (n=30, 119 embryos). No significant differences were found in blastocyst euploidy rates among underweight [OR = 1.15, 95% CI (0.74–1.18), p=0.53], overweight [OR = 0.77, 95% CI (0.54–1.10), p=0.16], or obese women [OR = 0.80, 95% CI (0.49–1.30), p=0.37] compared to normal-weight women. Similarly, the ongoing pregnancy rates did not differ significantly between BMI groups: underweight (44.0%), overweight (48.7%), obese (44.4%), and normal weight (45.2%). Additionally, paternal BMI showed no correlation with euploidy rates [OR = 1.02, 95% CI (0.93–1.14), p=0.60].

VARIABLES	UNDER WEIGHT	NORMAL WEIGHT	OVER WEIGHT	OBESE
NUMBER OF CYCLE	48	513	89	30
MATERNAL AGE	37.1 ± 3.7	38.0 ± 3.7	37.3 ± 3.6	36.0 ± 3.5*
PATERNAL AGE	39.7 ± 4.8	40.4 ± 4.8	40.0 ± 4.4	37.7 ± 4.7
N. OF OOCYTE RETRIVED	4.2 ± 6.9*	12.2 ± 6.8	10.9 ± 6.9	12.5 ± 6.8
N. OF OOCYTE FERTILISED	9.3 ± 4.4*	8.1 ± 4.5	7.0 ± 4.3	7.3 ± 4.3
N. OF EMBRYOS	177	1820	289	119

*p-value=0.05, gruppo di riferimento normopeso

ONGOING PREGNANCY RATES

