

Study question

What other factors, besides female age, significantly influence the likelihood of having ≥ 1 or ≥ 3 euploid embryos in an IVF/ICSI cycle with PGT-A?

Material and Methods

Retrospective cohort study of 7,590 cycles (4,251 women) undergoing autologous ovarian stimulation for IVF/ICSI with PGT-A (Biopsy days 5–7; NGS) between 2018–2024. Luteal phase and long agonist protocols were excluded. Patient/partner demographic characteristics, ovarian reserve markers, hormonal profiles, and sperm sources were recorded. Multivariable logistic regression models assessed the odds of obtaining euploid embryos per MII, ≥ 1 euploid, or ≥ 3 euploid embryos, incorporating random effects for patient-specific variability, and validated using 10-fold cross-validation. Analyses conducted in R.

Results

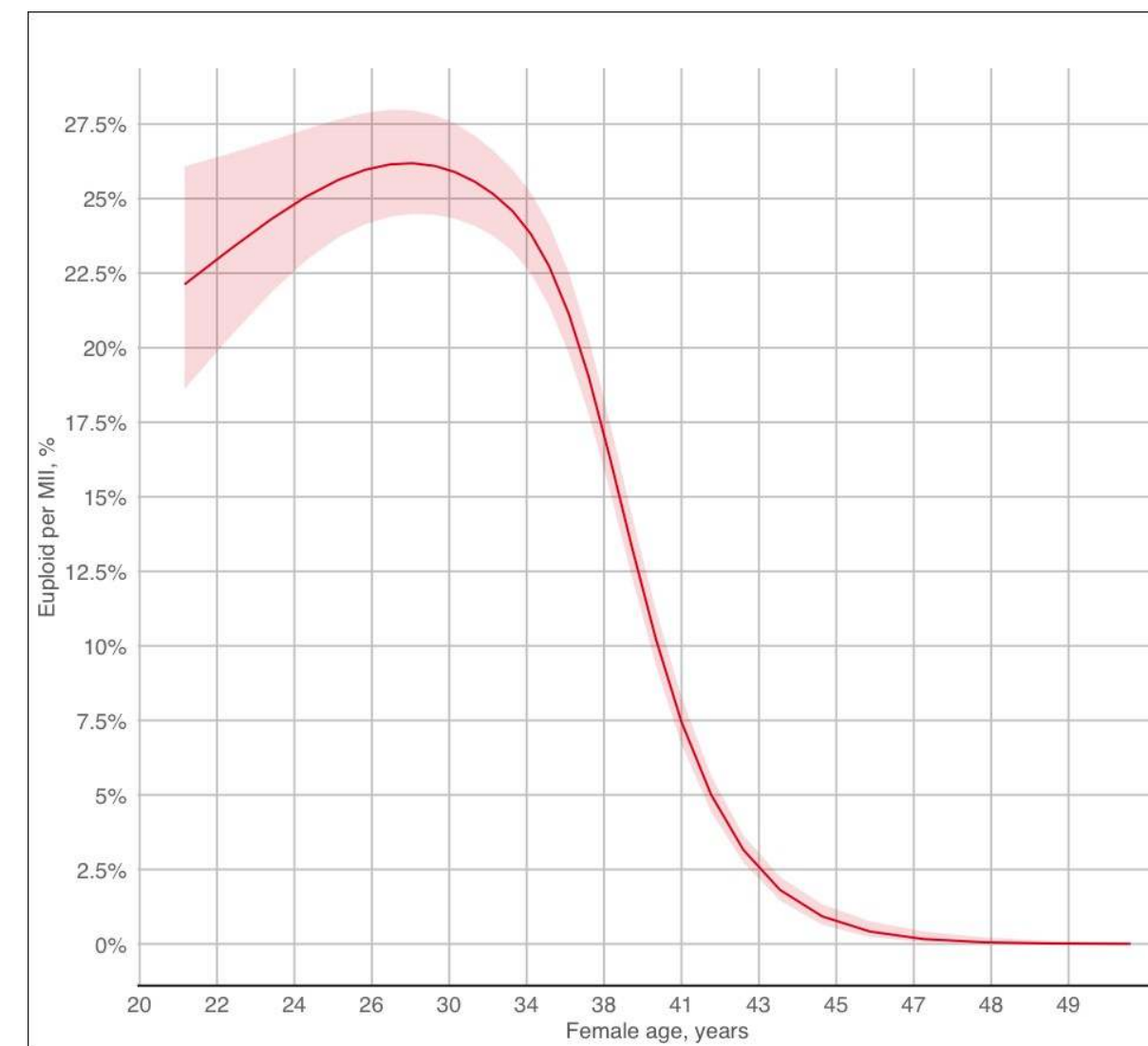
Besides female age (OR: 0.05, $p < 0.001$), testicular sperm (OR: 0.64, $p < 0.001$) had an independent strong association with euploidy rate per MII. Male age also presented a slight association (OR: 0.95, $p = 0.019$).

The probability of retrieving ≥ 1 euploid embryo was, as expected, significantly influenced by female age (OR: 0.01, $p < 0.001$). However, other variables like AMH (OR: 1.89, $p < 0.001$), testicular sperm (OR = 0.35, $p < 0.001$), basal Antral Follicle Count (AFC; OR: 1.57, $p < 0.001$), and basal Follicle Stimulating Hormone (FSH; OR: 0.82, $p < 0.001$) were also independently associated.

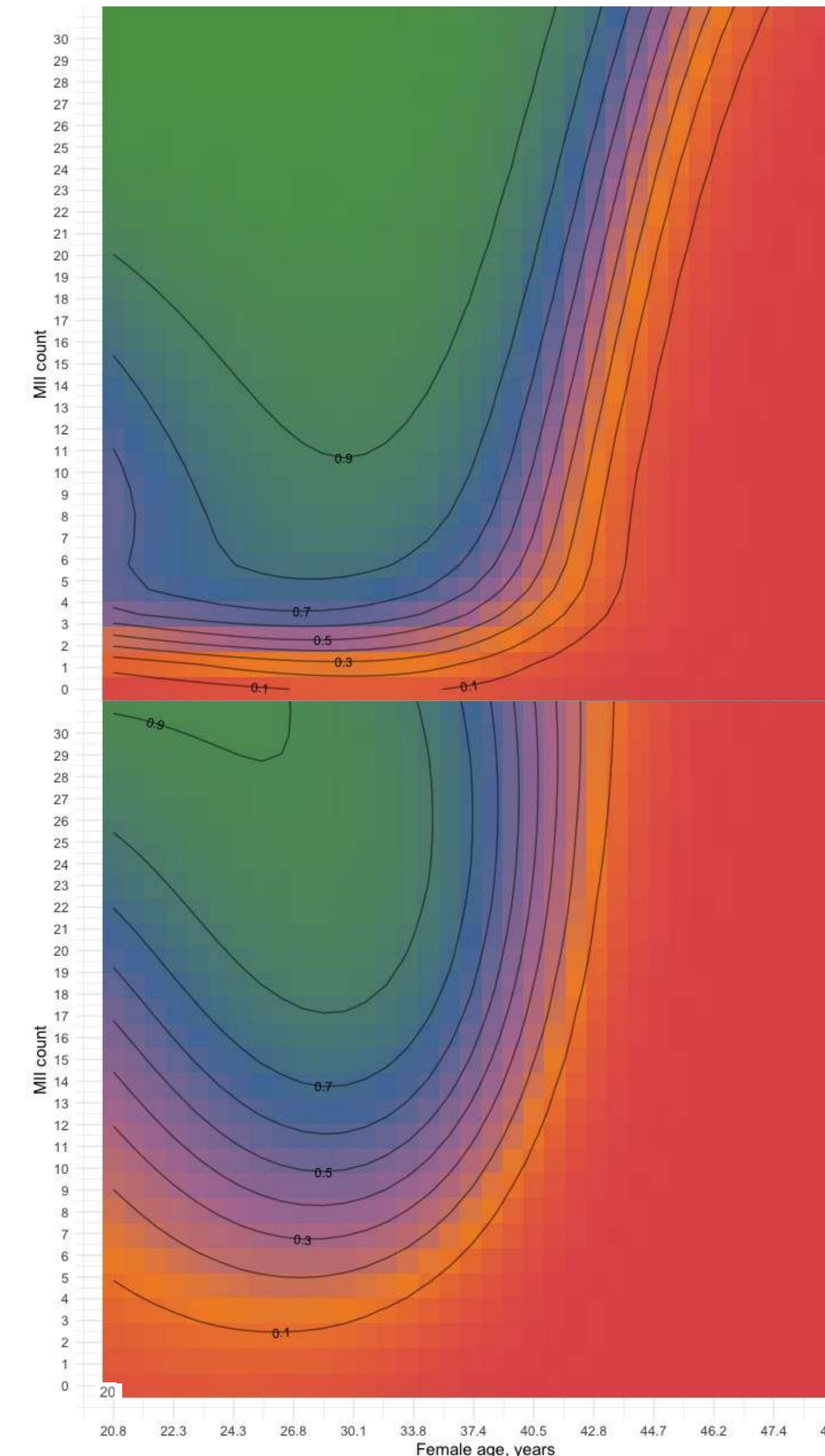
When focusing on retrieving ≥ 3 euploid embryos—ensuring a high probability of cumulative live birth—female age (OR: 0.00, $p < 0.001$), AMH (OR: 2.05, $p < 0.001$), basal AFC (OR: 1.64, $p < 0.001$) and basal FSH (OR: 0.76, $p < 0.001$) maintained robust and reliable associations, while testicular sperm (OR: 0.60, $p = 0.046$) presented a weaker statistical significance.

Conclusion: Age remains the dominant factor in determining euploid outcomes, however sperm source, male age, AMH, basal AFC and basal FSH should not be overlooked. Predictive models and density plots integrating these factors can enhance patient guidance and treatment optimization.

Euploid per MII, %



Probability of ≥ 1 euploid



Probability of ≥ 3 euploid