Progesterone in Women with Bleeding in Early Pregnancy: Absence of Evidence, Not Evidence of Absence

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A recent trial assessed the effectiveness of progesterone in preventing miscarriages.¹ The number of live births was 74.7% (1513/2025) in the progesterone group and 72.5% (1459/2013) in the placebo group ($p=.08$). The authors concluded: “The incidence of adverse events did not differ significantly between the groups.”

This conclusion leaves unaddressed the degree to which the data undercut or support the progesterone hypothesis. To quantify such evidence we conducted Bayesian logistic regression.^{2,3} Under the no-effect model H_0 , the log odds ratio equals $\psi=0$, whereas under the positive-effect model H_+ , ψ is assigned a positive-only normal prior $N_+(\mu, \sigma)$. A default analysis (i.e., $\mu=0$, $\sigma=1$) reveals only weak evidence for H_0 .⁴ Figure 1 shows the evidence is weak for all combinations of μ in $[0, 0.30]$ and σ in $[0.25, 1]$. R code for reproducing the analyses is available from <https://osf.io/tu4sv/>.

Figure 1. Across different priors, the evidence for no-effect H_0 over positive-effect H_+ is weak.

In sum, these data neither undercut nor support the progesterone hypothesis in compelling fashion.

References

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