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Evaluation of the effect of the absence of sperm with rapid and linear progressive motility on subsequent pregnancy rates following intrauterine insemination or in vitro fertilization

A. Bollendorf, J. H. Check and D. Lurie
University of Medicine and Dentistry of New Jersey, Robert Wood Johnson Medical School at Camden, Cooper Hospital/University Medical Center, Department of Obstetrics and Gynecology, USA.

The objective of this study was to investigate the association of rapid and linear progressive motility in seminal and Percoll-separated sperm with the outcome of intrauterine insemination (IUI) and in vitro fertilization (IVF) cycles. Motility was graded using the qualitative system proposed by the World Health Organization: grade A, rapid and linear, grade B, slow or nonlinear; grade C, non-progressive; or grade D, nonmotile. Absence of rapid and linear motility was defined as grade A sperm absent. Nine-hundred-fifty IVF and 1,448 IUI cycles were analyzed. In 7.9% (75) of the IVF cycles, grade A sperm were absent in the semen. Although the mean fertilization rate was lower in the absence of grade A sperm in the semen (44.5% vs. 63.4%, $P < 0.05$), the pregnancy rates were similar irrespective of their presence or absence (18.7% vs. 17.8%). In the cycles in which grade A sperm were absent following Percoll separation (26/950; 2.7%), the fertilization rate (29% vs. 62.8%) and the clinical pregnancy rate/retrieval were significantly lower (3.8% vs. 18.3%, $P < 0.05$). In 26.4% (382) of the IUI cycles, grade A sperm were absent in the semen and conception occurred in 30 (7.9%), compared to a pregnancy rate of 10.4% in the group with grade A sperm present in the semen. Following Percoll separation, only a 2.5% (2/80) pregnancy rate was observed in the group with no grade A sperm, compared to 10.2% in the group with grade A sperm ($P < 0.05$). The absence of rapid and linear motile sperm in the Percoll-separated sperm significantly reduced fertilization rates in vitro and pregnancy rates in both IUI and IVF cycles. The use of the total number of grade A sperm was also effective in predicting reduced fertilization in IVF and reduced pregnancy rates in IUI, but no better than the use of the mere presence/absence of grade A sperm. In a clinical situation, the simpler test is preferable. This type of evaluation is available to all centers as opposed to the more expensive computer-assisted semen analysis.

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