

Intrauterine insemination (IUI) does not improve pregnancy rates in infertile couples where semen parameters are normal and postcoital tests are adequate

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Summary

Purpose: To determine if intrauterine insemination (IUI) improves pregnancy rates in couples with a correctable ovulatory defect but a male partner with an apparent normal semen analysis and a normal postcoital test. **Materials and Methods:** A prospective evaluation of clinical live delivered pregnancy rates following the first cycle where follicular maturation was demonstrated naturally or with a follicle maturing drug. The couples were given the option of IUI. **Results:** The live delivered pregnancy rates per IUI cycle were similar with intercourse only vs addition of IUI (18.7% vs 21.4%). **Conclusions:** There is no evidence to support the notion that IUI improves pregnancy rates in circumstances where the semen analysis and postcoital tests are normal.

Key words: Intrauterine insemination; Postcoital test; Normal semen analysis.

Introduction

A woman's most fertile cervical mucus immediately precedes her peak serum estradiol (E2). Peak serum E2 induces a luteinizing hormone (LH) surge which causes the extrusion of the oocyte from the follicle approximately 36-40 hours later. The hormonal consequences of the rise in serum LH lead to subsequent changes in hormonal secretion by the granulosa-theca cells leading to a drop in the serum E2 and an increase in serum progesterone (P).

The rise in P and decrease in E2 leads to diminishing mucus quality so that right at the time of ovulation the mucus is inferior to 36-40 hours before and may not allow the sperm to progress through the cervical mucus to reach the uterine cavity [1]. Thus one theoretical advantage of intrauterine insemination (IUI) where processed sperm is placed in the uterine cavity is that it allows more immediate contact of fresh sperm with the oocyte rather than sperm that is 40+ hours old where there may be failure to maintain the sperm's fertilization potential [2].

The present study aimed to determine if the addition of IUI despite a normal post-coital test in couples with no apparent male factor issues may improve the pregnancy rate.

Materials and Methods

Couples with a minimum of one year of infertility with male partner's normal semen analyses and female partner's with correctable ovulation disorders were recruited. Couples were asked in the beginning of the cycle whether they would proceed with IUI even if the postcoital test was sufficient or not. They were

advised that a theoretical advantage of the IUI was to deposit sperm closer in time to ovulation since cervical mucus may be impenetrable at this time. The IUI was performed about 40 hours after either a spontaneous LH surge or the injection of 10,000 units human chorionic gonadotropin (hCG). Ultrasound demonstrated release of the oocyte as evidenced by shrinkage of the follicle by at least five mm.

Comparisons were made of pregnancy rates in the first cycle to those adding IUI or not. If the postcoital test failed to demonstrate any sperm with progressive motion, they would be eliminated from the study. Postcoital tests were performed at the time of follicular maturity (at least one follicle of 18-mm average diameter with a serum estradiol > 200 pg/ml and prior to the LH surge).

Sperm concentration, percent motility, morphology using strict criteria, antisperm antibodies and hypo-osmotic swelling tests were also performed on each initial sperm specimen.

Results

Three couples were eliminated for an insufficient post-coital test leaving 72 study couples. There were 16 couples who chose to not have an IUI (22.2%) and 56 who chose to add IUI (77.8%).

Pregnancies were achieved in 4/16 couples with intercourse (25%) vs 15/56 (26.7%) of those adding IUI. Live deliveries occurred in 3/16 (18.7%) with intercourse only vs 12 (21.4%) with IUI added (Fisher's exact test showed no significant difference in pregnancy rates).

Discussion

Griffith and Grimes performed a meta-analysis and concluded that the postcoital test was not very good at predicting fertility potential [3]. We do not agree with their conclusions since Griffith and Grimes did not select studies where the postcoital test was determined accord-

ing to the proper blood tests confirming the right timing [1, 4]. Interestingly, Griffith and Grimes calculated that based on their conclusion the postcoital test is not valid in that 50 million dollars per year of fertility testing may be wasted on this test. Some modern OB/GYN textbooks refer to the postcoital test as an archaic test that used to be performed but today has no value.

Many fertility centers instead of doing postcoital tests simply perform IUI each cycle empirically. The charge for IUI varies from \$250.00 to \$2,000.00 and some centers perform them two times in a cycle. The charge of a one time postcoital test is \$75.00 and the average charge of IUI is about \$600.00. Assuming three IUIs per pregnancy, and since this study found no benefit to the IUI if the postcoital test was normal, it can be stated that the policy of circumventing the postcoital test and simply performing an IUI wastes 1.2 billion dollars per year if the calculation of Griffith and Grimes is used (24 x 50 million).

These data suggest that if lack of longevity of fertilization potential by some males' sperm can be a cause of infertility, it is not frequent enough to allow improved pregnancy rates with IUI. Thus empirical use of IUI for unexplained infertility is not cost effective. This policy of using empirical IUI for unexplained infertility dates back to 1991 with a publication finding a reasonably good pregnancy rate using superovulation and IUI instead of in

vitro fertilization for unexplained infertility [5]. However, it is not clear what part of the treatment was responsible for the pregnancy – the follicle maturing drugs, the hCG injection, the IUI or the luteal phase support with P [5].

References

- [1] Check J.H., Nowroozi K., Wu C.H., Liss J., Dietterich C.: "The use of pelvic sonography and serum estradiol and progesterone assays in diagnosis and treatment of cervical factor". *Infertility*, 1986, 9, 247.
- [2] Check J.H., Bollendorf A., Zaccardo M., Lurie D., Vetter B.H.: "Intrauterine insemination for cervical and male factor without superovulation". *Arch. Androl.*, 1995, 35, 135.
- [3] Griffith C.S., Grimes D.A.: "The validity of the postcoital test". *Am. J. Obstet. Gynecol.*, 1990, 162, 615.
- [4] Check J.H.: "The importance of the post coital test". *Am. J. Obstet. Gynecol.*, 1991, 164, 932.
- [5] Dodson W.C., Haney A.F.: "Controlled ovarian hyperstimulation and intrauterine insemination for treatment of infertility". *Fertil. Steril.*, 1991, 55, 457.

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