

CORRELATION OF MOTILE SPERM DENSITY AND SUBSEQUENT PREGNANCY RATES IN INFERTILE COUPLES

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By carefully evaluating a group of infertile couples in whom each female factor was identified and corrected, the motile density of the male ejaculate did not appear to contribute significantly to the infertility problem unless it was below $2.5 \times 10^6/\text{mL}$, as evidenced by similar 6-month pregnancy rates in all other couples.

Key Words: Sperm; Pregnancy; Infertility; Motility.

INTRODUCTION

While it is well established that men with subnormal motile sperm densities (MD) may be capable of fertilization, there are those with normal counts and percentages of motile sperm with progressive motion who may prove to be subfertile. The normal MD value according to WHO is $10 \times 10^6/\text{mL}$ [4]. This study was performed to evaluate whether men with levels greater than the established lower limit of normal MD achieve a higher pregnancy rate than those with MD below this value. An attempt was also made to identify the level below which the rate of pregnancy steeply declines.

MATERIALS/METHODS

Two hundred and eighty one consecutive infertile couples (minimum of 1½ years) in whom the female partner was initially found to have an infertility factor were selected for the study. Two baseline semen analyses obtained after 48–72 h from last ejaculation were averaged in the 281 men. The sperm count was measured using a Makler counting chamber. An additional requirement for inclusion in the study was that all female infertility factors be considered fully corrected. The number of pregnancies achieved within 6 cycles of correction of the female problem was ascertained.

The female counterpart had initially been diagnosed as having either anovulation, a luteal phase defect (LPD), cervical factor, or endometriosis. Anovulation was diagnosed by the presence of amenorrhea or by the failure of the patient to demonstrate a level of serum progesterone (*P*) over 4 ng/mL despite careful monitoring in those women who did menstruate. LPD was diagnosed by 2 consecutive out-of-phase endometrial biopsies obtained 12–13 days postovulation. Cervical factor was established if poor quality mucus excited at the time that a mature follicle was demonstrated by sonography (18–24 mm diameter) and serum estradiol level (minimum of 200 pg/mL).

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To determine if motile sperm density is a factor in rate of pregnancy, the couples were separated into 5 groups based on each male partner's MD, ranging from <2.5 to $\geq 15 \times 10^6/\text{mL}$. Fertility rates and comparisons were calculated for each group. The Fisher exact probability test was used to analyze the association between motile sperm density and subsequent pregnancy rates.

RESULTS

The number and percentage of pregnancies in 281 infertile couples during a 6-month interval beginning from the first cycle in which of all female infertility factors were corrected according to the motile densities of the male partners (Table 1). When the MD was less than $5 \times 10^6/\text{mL}$, 36% (16/45) of the women conceived in comparison to 81% (191/236) when the MD was $\geq 5 \times 10^6/\text{mL}$. When comparison was made between couples for whom the motile density was <2.5 and those with motile densities of ≥ 2.5 , a statistical significance was found in the number of pregnancies achieved ($p < .007$; Chi-square analysis and Fisher's exact test, as appropriate). No statistical difference were seen comparing group 2 (≥ 2.5 but <5) to any of the groups except group 1 (<2.5).

DISCUSSION

It would appear that the motile sperm density does not separate fertile from subfertile men except possibly when that value is extremely low ($<2.5 \times 10^6/\text{mL}$). These findings underscore the need to select other alternative tests that better evaluate the fertility potential of spermatozoa.

Paulson and Wacksman previously reported a significant improvement in semen parameters in oligozoospermic men following clomiphene citrate therapy; the pregnancy rate, however, was only 23% [2]. Since Check and Rakoff found some defect in all 10 partners of the 10 oligozoospermic men that they treated with the same clomiphene citrate regimen, they attributed the low pregnancy rate of the Paulson/Wacksman report to possible inadequate correction of some of the infertility factors in the female partner [1]. They did, in fact, report 90% pregnancies within 8 months of therapy and attributed the rise in success not only to improving the male factor but to the concomitant correction of the female factor(s) as well [2]. However, the data from the present study cast some doubt as to whether the increased pregnancy rate was exclusively related to the treatment of the female, or perhaps totally unrelated to the male

TABLE 1 Correlation of Motile Density and Pregnancy Rates During a 6-Month Interval

	Motile Density (mil/mL)				
	<2.5	≥ 2.5 to <5	≥ 5 to <10	≥ 10 to <15	≥ 15
Number of couples	32	13	31	34	171
Number pregnant	7	9	25	27	139
Percent pregnant	22	69 ^a	81 ^a	79 ^a	81 ^a

Note. Sperm motile densities (MD) were performed on 281 men whose female partners were felt to be corrected of infertility factors. The results were divided into groups according to motile density levels. Couples were allowed 6 cycles to achieve pregnancy.

^a $p < .001$ compared to group 1.

therapy. Similarly, doubts about the efficacy of varicocelectomy may be drawn and may explain the wide range of pregnancy rates reported (24–53%) [3].

Perhaps future studies should not only be randomized and blinded but also employ couples with a minimum of 1½ years of infertility. Before initiating a clinical study, it is recommended to select couples in which the female partner is totally corrected of infertility problems and then allow 6 cycles for couples to conceive.

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