

EFFECT OF ANTISPERM ANTIBODIES ON COMPUTERIZED SEMEN ANALYSIS

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The effect of antisperm antibodies (ASA) in males was determined in 239 men by the use of a computerized semen analyzer (CASA). ASA was assessed using the direct immunobead test (IBT). Sperm variables for men with positive ASA were significantly lower than those with negative results in percentages of motility, velocity, and linearity.

Key Words: Sperm; Antibody; CASA; Computer.

INTRODUCTION

Antisperm antibodies are present in approximately 8% of the male population [1]. These antibodies may be associated with decreased fertilizing ability in vivo [2] as well as in vitro [3]. Poor sperm motility may be related to an intrinsic sperm defect with the coincidental presence of ASA. However, in other circumstances, the presence of ASA may be etiologic; although the male's ejaculate is normally devoid of complement, injury to the male ejaculatory system may have caused complement to leak into it from outside. This study was designed to see if semen variables as determined by computerized semen analysis are adversely affected by ASA attached to the sperm.

MATERIALS/METHODS

A total of 239 consecutive men were evaluated. Two baseline semen samples were evaluated by computerized semen analysis (CASA; Cryo Resources, NY) for sperm morphology and by the immunobead test (IBT) for the presence of antisperm antibodies (ASA).

Antisperm Antibody Test

A direct immunobead test (IBT) was performed on all semen specimens similar to that described by Bronson [2]. The percentage of sperm with ASA and their attachment sites were noted. A level $\geq 50\%$ was considered positive and $\geq 20\%$ to 49% weakly positive based on previous data from Jennings et al. [5].

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TABLE 1 Comparison of CellSoft Variables to ASA Groups

	Group 1, Positive (n = 24)	Group 2, Weak Positive (n = 11)	Group 3, Negative (n = 204)	Overall p (ANOVA)
Count	63.2 ± 51.7	104.8 ± 57.6	91.8 ± 73.4	NS
Motility	35.5 ± 19.2 ^b	48.2 ± 20.8	49.8 ± 20.1	0.005
Velocity	39.7 ± 10.1 ^b	47.2 ± 9.2	44.2 ± 9.5	0.048
Linearity	5.3 ± 1.5 ^{a,b}	6.2 ± 1.4	6.1 ± 1.1	0.011
ALH mean	2.0 ± 0.6	2.2 ± 0.5	2.1 ± 0.5	NS
ALH max	2.4 ± 0.8	2.8 ± 0.6	2.6 ± 0.6	NS
Beat/cross frequency	14.3 ± 3.6	15.2 ± 1.7	15.2 ± 2.0	NS

^ap < 0.01 vs. group 2 by Fisher's protected LSD test.

^bp < 0.01 vs. group 3.

Semen Analysis

The minimum requirement for each of the two baseline specimens was a volume of 1.5 ml with a sperm concentration of at least 20×10^6 /ml and greater than 50% normal forms. Sperm morphology was assessed using the criteria set by the World Health Organization (WHO). The semen samples were evaluated by CellSoft computerized semen analysis (Cryo Resources, New York, NY). Normal figures for CASA variables were based on initially suggested "norms" measured by Cryo Resources. They were adapted to our specific instrument and patient population, which included the lowest acceptable values for our donor program. Differences in CellSoft variables among the groups were analyzed by analysis of variance (ANOVA). Pairwise differences in variables were analyzed using Fisher's protected LSD test. A *p* value of <0.05 was considered to be statistically significant.

RESULTS

Table 1 compares the results of CASA in 239 men who were: Group 1 = ASA positive (>50%, n = 24), Group 2 = weakly positive (≥20%–49%, n = 11) and Group 3 = negative (<20%, n = 204). The mean levels of the different semen parameters are noted. There were no statistically significant differences between the three groups for sperm concentration and total count, amplitude lateral head (ALH) mean, ALH max, and beat/cross frequency. However, significant differences were found between Groups 1 and 3 for percentages of motility, velocity, and linearity.

In a study by Mathur et al. no differences were found between 55 fertile non-autoimmune versus 44 fertile men for the following computerized sperm cell motion analysis variables: sperm count, motility, mean swimming speed, mean linearity, and motility index [6]. These variables, however, were significantly lower in men whose sera were positive for ASA [6]. The data presented here evaluating CASA in all men with positive IBT demonstrates similar significant reductions in the males with positive ASA in percentages of motility, velocity, and linearity. No differences in this study were found in sperm count. Upadhyaya et al. similarly conducted that positive ASA did not result in decreased sperm concentration but did correlate with reduced motility and viability [7].

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