EFFECT OF TIME INTERVAL BETWEEN EJACULATIONS ON SEMEN PARAMETERS

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The suggested abstinence period prior to performing a semen analysis has been 2–5 days. If one allows too long of an interval between ejaculates, motility will decrease significantly. This study was designed to evaluate whether any of the semen parameters change with increasing intervals of time between ejaculates and, if so, what parameters are involved. A derived calculation total-live sperm count (product of count/milliliter × volume × percent motility) was significantly lower at 3 days than at 7-, 10-, and 14-day intervals. Sperm count and motility showed a significant decrease at 14 days as compared to 7 days but not to 3 days. There were no significant differences between motility, the hypoosmotic swelling test, velocity, linearity, motile density, or morphology (with strict criteria). The ideal abstinence interval is between 7 and 10 days not 2–3 days, and motility does not appear to significantly decrease with a long interval between ejaculates.

Key Words: Abstinence period; Semen parameters; Sperm motility.

INTRODUCTION

While there have been slight variations in the suggested abstinence period for producing a viable semen sample, most reproductive endocrinologists, urologists, and andrologists recommend 2–5 days [4, 5]. For example in the text *Clinical Gynecologic Endocrinology and Infertility* it is stated that counts at the lower levels of the normal range may be depressed below normal levels by ejaculations occurring daily or more frequently [4]. Furthermore, it is stated that abstinence for 7 days or more to accumulate sperm may be counterproductive because the minimal gain in numbers can be offset by the lower motility produced by the increased proportion of older sperm [4].

This study was initiated to evaluate the effects of various abstinence periods on semen parameters measured by computer-assisted semen analysis (CASA), morphologic analysis using stricter criteria [3], and the hypoosmotic swelling (HOS) test [1, 2].

MATERIALS AND METHODS

Semen specimens from 7 men were evaluated at 3, 7, 10, and 14 days of abstinence. Consecutive ejaculates were obtained using the following pattern: 3, 7, 3, 10, 3, 14. The samples were evaluated by

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the Cellsoft computer-assisted semen analyzer (Cryo Resources LTD, New York) for several sperm parameters, including motile density, percent motility, velocity, linearity, maximum lateral head displacement (ALH max), mean lateral head displacement (ALH mean), and beat-cross frequency. The specimens were further assessed according to viability, the hypoosmotic swelling test [1, 2], morphology using strict criteria [3], and sperm volume.

Each of the CellSoft sperm parameters was analyzed according to days of abstinence between semen production. Analysis of variance (ANOVA, one-way, repeated measures) was utilized to analyze the data. Statistical significance was measured at or below the $p = .05$ level. For each parameter with a significant p value, a series of paired t tests (protected) were further used to compare days of abstinence. All data are expressed as a means ± SD.

RESULTS

The effects of abstinence on the various parameters of the semen analysis are presented in Table 1. Comparison of the four abstinence intervals shows significant differences in count, viability, and volume. A derived variable, total live sperm (TLS), was calculated by multiplying count by viability/100 by volume for each patient at each time interval. Differences between the intervals were significant when 3 days was compared with all other time intervals. Sperm count was significantly higher following 7 days of abstinence vs 3 days, while viability was the same; count and viability were all significantly decreased following 14 days of abstinence as compared to after 7 days. There were no differences in these parameters between 7 days of abstinence and 10 days. Ejaculate volume increased significantly with increasing interval.

The TLS was 195 + 130 for the 3-day abstinence, 571 + 641 for 7 days, 562 + 504 for 10 days, and 572 + 403 for 14 days. Because of the increased volume, there were no significant differences in TLS values between 7-, 10-, and 14-day intervals of abstinence, while TLS was significantly higher at 10 and 14 days compared to the 3-day period of abstinence. There were no significant differences between motility, HOS, velocity, linearity, ALH max, ALH mean, beat-cross frequency, morphology, or motile density.

DISCUSSION

An abstinence period between 7 and 10 days may be preferable to the 3-day interval presently recommended by most physicians. Obviously, there is not much of an expected clinical difference in the normal donors, even with a difference as large as 96×10^6/mL vs 186×10^6/mL. However, if the same magnitude of differences is found in oligozoospermic

TABLE 1 Semen Analysis Parameters and Periods of Abstinence

	Period of Abstinence (days)			
Parameter	3	7	10	14
Count ($\times 10^6$/mL)	96 + 37	186 + 92	184 + 70	131 + 55
Viability (%)	84 + 5	85 + 5	82 + 8	72 + 7
Volume (mL)	2 + 1	3 + 1	3 + 2	5 + 3
Total live sperm[a]	194 + 129	571 + 640	561 + 503	572 + 402

[a]Total live sperm = count × viability/100 × volume.

men, perhaps they should be advised to abstain for 7–10 days prior to ovulation by the female partner. One cannot assume, however, that an opposite response might be seen in patients with asthenozoospermia where perhaps motility might worsen with increasing abstinence. Thus, this study should be repeated with an oligozoospermic asthenozoospermic population.

Often when a male partner presents for an infertility consultation, it would be convenient to evaluate a sperm specimen at that time. Unfortunately, the interval of abstinence frequently is not ideal and so the patient is asked to reschedule a visit. Even up to 2 weeks abstinence time, a specimen as good as a 3-day interval specimen can be expected.

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