Diurnal variation of semen quality in human males

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Objective: In humans, as in most animal species, reproductive processes and fecundity are influenced by seasonal rhythms. There are documented seasonal modifications of reproductive functions and semen parameters in men, although if there is a diurnal variation in semen parameters particularly an improvement around the estimated preferential time for ovulation - is unknown. The objective of our study was to evaluate whether there is a diurnal variation in sperm quality.

Design: Prospective study at tertiary care level hospital.

Materials and Methods: The study was approved by Institutional Review Board and the patients involved granted their informed consent. Two hundred and ninety-three semen samples were obtained from patients who requested infertility investigation. Of these, 172 semen samples were collected in the morning and 121 collected in the afternoon. Semen samples were obtained by masturbation after at least 48 hours to 5 days of abstinence. Samples were collected into sterile containers and allowed to liquefy at 37°C for 30 minutes and analyzed sperm concentration, percent motility, and morphology according to World Health Organization (WHO) criteria and Tygerberg’s strict criteria. Sperm variables were compared between the morning and afternoon and data was evaluated with ANOVA.

Results: The mean ± standard error sperm concentration in the morning was 23.3 ± 2.4 and in the afternoon 19.1 ± 1.8 (P = 0.182). Also, sperm morphology according to the WHO criteria did not differ between the values found in the morning (18.95 ± 0.9) compared to the afternoon (18.23 ± 0.78) (P = 0.778). In addition, sperm morphology according to the Tygerberg’s strict criteria did not differ between the values found in the morning (6.51 ± 0.48) compared to the afternoon (6.18 ± 0.53) (P = 0.657).

However, sperm motility was higher in the afternoon (54.4 ±1.8) compared to the morning (49.42 ± 1.6) (P = 0.043).

Conclusion: The findings of this prospective analysis show no variation in the sperm concentration and morphology and only significant increase in the sperm motility in the evening hours. Matching of the diurnal variation of semen parameters such as motility with the diurnal rhythm of the LH surge may result in increased fecundity and chances of natural conception.

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