WHICH TEST OF SPERM QUALITY IS CLINICALLY USEFUL IN THE SUBSEQUENT EVALUATION OF NORMOZOOSPERMIC INFERTILE MEN?

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Objective: Diagnosing defective sperm function is difficult by routine semen analysis because spermatozoa are highly specialized cells that express a diverse array of biological properties to achieve fertilization. A subset of men with normal standard sperm parameters, i.e. normozoospermic, may still be infertile. They are diagnosed as idiopathic or unexplained infertility when examination of the female partner is normal. In this study, we examined the diagnostic significance of hypo-osmotic swelling (HOS), acrosome reaction (AR), acrosin activity, and antisperm antibody (ASA) tests in the evaluation of normozoospermic infertile men.

Design: Prospective study in a tertiary care facility in an academic institution.

Materials/Methods: Study included 40 men attending our infertility clinic with a history of infertility of more than 12 months. All men had normal standard semen parameters, on repeated analysis, according to the World Health Organization guidelines (WHO, 1999) (sperm concentration 20X10⁶/mL, motility ≥50%, normal sperm forms ≥30%, and seminal leukocytes ≤1X10⁶/mL). A group of normal fertile donors (n = 20) served as a control. Semen samples, collected by masturbation, were subjected to HOS test. Assessment of AR was performed by a triple-staining technique and acrosin activity using a spectrophotometric enzyme assay. Mixed antiglobulin reaction (MAR) test was performed to detect ASA (IgG).

Results: Standard semen parameters were not significantly different in normozoospermic patients compared to the fertile donors (P > 0.05). Similarly, no significant differences were observed in results (mean ± standard deviation) of HOS and AR in the infertile patients (74 ± 7.9 and 19.4 ± 2.7; respectively) versus fertile donors (77.7 ± 5.5 and 20.5 ± 1.4; respectively) (P > 0.05). However, acrosin activity in the patient group (17.7 ± 4) was significantly lower than in the donors (32.6 ± 5; P = 0.001). Sperm antibodies (IgG) were positive in 3 patients, whereas all donors were negative. Sperm motility was relatively reduced in the 3 ASA-positive cases compared to the remaining ASA-negative patients.

Conclusions: The results of the 4 additional tests of sperm quality, performed in this study, indicate that levels of acrosin activity were significantly reduced in normozoospermic infertile men compared to the fertile donors. Therefore, the integration of acrosin activity test in the infertility work-up may help detect an abnormality in a subset of infertile men with a diagnosis of idiopathic or unexplained infertility based on apparently normal standard sperm characteristics, i.e. normozoospermia.

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