Semen quality score is a novel measure of sperm quality in infertile men
RK Sharma, DR Nelson, AJ Thomas, Jr., and A Agarwal

Dept. of Urology, Dept. of Biostatistics and Epidemiology, The Cleveland Clinic Foundation, Cleveland, Ohio

Objectives: We reduced 9 semen characteristics into 2 semen scores. The purpose of this study was to determine if these 2 scores can be used effectively in assessing semen quality in infertile men.

Design: A retrospective review of semen analysis reports of 88 infertile men and 19 normal healthy donors.

Materials and Methods: Semen samples were obtained from 88 infertile patients with varicocele (77 with varicocele only and 11 with varicocele and infection) and 43 post-vasectomy reversal patients. Specimens were also obtained from 19 normal, healthy donors. Nine semen characteristics (concentration, motility, curvilinear velocity, straight-line velocity, average path velocity, linearity, amplitude of lateral head movement) were determined by a computer assisted semen analyzer and 2 evaluated manually (sperm morphology scoring by WHO and Kruger’s strict criteria). Principal component analysis was applied to these parameters after log transformation to reduce the effects of varying scales and distribution.

Results: The semen characteristics could be summarized as 2 semen scores which account for 80.3% of all of the variability among original semen characteristics. The first principal component (a weighted sum of all of the semen characteristics accounting for 64.7% of the overall variability) was named “SQ” (semen quality). The second component (a weighted sum of 8 characteristics subtracted from concentration) was considered a measure of relative quantity and was named “RQ.” As a reference standard, the distributions of SQ and RQ among the controls were assigned mean value of 100 ± 10. The semen quality score for varicocele and varicocele with infection group was comparable (78.6 ± 17.4 and 84.8 ± 20.6) but significantly different from the control (100.0 ± 10, p <0.001 and 0.03). Vasectomy reversal patients SQ score of 78.2 ± 16.8 was significantly lower from controls (p <0.001). No differences between the patients and controls were seen in the RQ score.

Conclusions: The SQ score is a new and effective measure of semen quality in infertile patients with varicocele and in those following vasectomy reversal. High SQ score (>80) indicates good semen quality. The results of semen score can provide simple, meaningful information on the quality of semen specimens for the clinician.