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Studies on Varicocele III: Ultrastructural Sperm Evaluation and 18, X and Y Aneuploidies

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The idea that varicocele plays a detrimental role in fertility is supported by the presence of a higher frequency of affected men among the infertile population than among men with normal semen parameters. In this research we examined ejaculates from a large group of selected men affected by varicocele by light and electron microscopy. The effect of varicocele on chromosome meiotic segregation was investigated by fluorescence in situ hybridization (FISH). The potential benefits of varicocelectomy on sperm quality were evaluated by analyzing sperm characteristics before and after surgical correction of varicocele. Transmission electron microscopy (TEM) analysis, elaborated previously, showed that the incidence of immaturity, apoptosis, and necrosis was higher in the varicocele group than in controls. FISH analysis performed on sperm nuclei from selected patients with varicocele showed that the mean frequencies of disomies and diploidies were generally out of the normal range, indicating a severe disturbance in meiotic segregation. Sperm characteristics evaluated before and after varicocele repair showed a general improvement. As a consequence, the varicocele seem to affect sperm morphology and function concomitantly with meiotic segregation derangement. In consideration of these data, we suggest that TEM and FISH analyses should be performed for all varicocele patients.

Key words: FISH, pathological spermatogenesis, TEM, varicocelectomy

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