ORIGINAL ARTICLE

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Hemodynamic evaluation of varicocele: the role of scrotal scintigraphy and Doppler ultrasonography in the prediction of postoperative seminal improvement

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Aim: The aim of this study was to evaluate the hemodynamics of varicocele using Doppler ultrasonography and scrotal scintigraphy, and to compare the value of these two methods in the prediction of seminal improvement after varicocelectomy. ***Materials and Methods:*** A total of 40 men with left sided varicocele presented for surgery because of infertility of at least one year in duration. Preoperative and postoperative sperm counts and per cent motility were obtained. Dynamic scrotal scintigraphy and Doppler ultrasonography were performed in all patients. Three perfusion patterns according to the time-activity curves (TAC) generated from scrotal perfusion images were defined. Type 1: radioactivity shows faster accumulation and maintenance of a higher level on the left side than on the right side. Type 2: time-activity curve rises gradually to a higher level on the left than on the right. Type 3: time-activity curve increases symmetrically and slowly on both sides. The relationship between preoperative TAC patterns and postoperative seminal findings, and preoperative Doppler grades and postoperative seminal findings were investigated. ***Results:*** Improvement in total motile sperm counts was not statistically significant (37.8% ± 3.2% versus 45.2% ± 8.5%) ($p = 0.751$). Following varicocelectomy, sperm concentration (million sperm per m*l*) increased from 16.9 ± 3.3 to 26.6 ± 8.6 ($p = 0.015$). According to the Doppler examinations, postoperative improvement in sperm concentration was demonstrated in patients with grade 1 varicocele (66%). Scintigraphic evaluation showed improvement in patients showing TAC-2 and TAC-3 patterns (63%). ***Conclusion:*** Local hemodynamics of varicoceles demonstrated by scintigraphy and Doppler seemed to be different. Grade 1, TAC-2 and TAC-3 patients may be better candidates for varicocelectomy. Scintigraphy and Doppler ultrasonography showed similar success rates in the prediction of improvement following varicocelectomy in the present study.

Key words: varicocele, scrotal scintigraphy, Doppler ultrasonography, semen, infertility