Medical Journal of the
Islamic Republic of Iran

Volume 14
Number 1
Spring 1379
May 2000

Original Articles

VARICOCELE SIZE AND SEMEN QUALITY

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ABSTRACT

In this study we have described our varicocele cases in terms of associated symptoms/signs. In addition, we have tested the correlation between semen parameters and varicocele grades and compared the relative frequencies of associated symptoms/signs in different varicocele grades. 119 referred cases of varicocele were categorized based on clinical criteria into 3 grades by one examiner. The relative frequencies of associated symptoms/signs of the grades were compared. 52 of the cases whose semen analyses were performed at the same laboratory were included for comparison of semen parameters.

Most of the cases were single conscripts. Age range was 18 to 38 years and the mean age was 23 years. Pain was the most common associated finding in our mostly single physically active cases. Of all the 119 cases, 9 were grade 1, 63 grade 2, and 47 grade 3. Mean sperm concentration was 60.3 million per cubic centimeter. No significant difference was found in the relative frequencies of associated symptoms/signs among different grades. Difference in semen parameters among grades was negligible and not significant at 0.1 (0.05 as well).

Pain could be the most common associated finding in young single physically active varicocele cases. It seems that varicocele grade bears no significance over the relative frequencies of associated symptoms/signs. Our data is against any clinically and/or statistically significant relationship between varicocele size and semen parameters.

MJIRI, Vol. 14, No. 1, 1-4, 2000
Keywords: Varicocele, Semen, Grade.

INTRODUCTION

Varicocele, derived from varix (an enlarged and tortuous artery, vein, or lymphatic) and kele (tumor), is an enlarged and tortuous spermatic vein above the testicle that mostly occurs on the left side. Though several imaging modalities (Doppler, ultrasonography, venography, and thermography) are used nowadays for the diagnosis, clinical diagnosis through a thorough physical examination is emphasized by authorities. Varicocele produces pain, has been associated with testicular atrophy and is correlated with poor semen

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quality (decreased sperm motility and concentration, increased abnormal morphology, and stress pattern) and infertility.[1,2]

Although the significance of varicocele grading is not definite, having a kind of measure for varicocele size has been commonplace. Physicians do like to know whether size has any bearing on the severity of symptoms/signs, laboratory findings, and the outcome of surgical correction. Several studies have addressed the issue.[4-9] In the most recent and methodologically sound one,[9] Steckel, Dicker, and Goldstein proved a numerically important and statistically significant relationship between varicocele size and semen quality among infertile varicocele cases. In our study we prospectively examined the associated symptoms/signs and significance of grading over associated findings and semen parameters.

MATERIAL AND METHODS

Diagnosis

All examinations were done by one examiner (an experienced urologist) with the patients in the upright position. The clinical guidelines for grading were defined as follows: Grade 3: typical appearance on inspection, Grade 2: typical 'bag of worms' sensation on palpation, Grade 1: typical Valsalva/cough induced impulse, and Grade 0: imaging based (with uncertain clinical significance). Respective grades lack characteristics of previous one(s). Associated symptoms/signs were pain, 'mass' (reported by the patients), infertility, and atrophy.

Cases

Our clinic is a referral center and most of the cases were single conscripts who were screened and referred (see modes at the *Results* section). We had 131 patients based on clinical diagnosis. Grades of 8 cases were lacking. These plus 1 extremely oligospermic one (count: 400000/mL) were excluded. Of the remaining 122 cases, 3 cases were bilateral and 52 had their test performed at the same laboratory.

Semen analysis

Semen was obtained by masturbation at the laboratory after a minimum of 3 days abstinence, each case one specimen. Specimens were examined within a quarter h our of collection and assessed for volume, sperm concentration, motility, and morphology. Sperm counts were performed with a Neubauer chamber, motility was evaluated under light microscopy, and morphology was assessed after preparation with Fuschin stain. Our reference values are as follows: sperm concentration >60 million/mL, percent abnormal morphology <30, and percent motile sperm at 1 hour >60.

Table I. Relative frequencies of the associated symptoms/signs of the cases and comparison between the groups (p value: 0.5).

Group/Cause	%Infertility	%Mass	%Pain	%Pain & Mass
A	11	11	75	3
B	11	18	64	7
All cases	11	13	68	4

(Atrophy/missing was the associated finding in 4% of the cases.)

Table II. Comparison of semen parameters between the two groups of varicocele grades.

Semen Parameters/ Group	Sperm Concentration	%Motile Sperm	%Abnormal Morphology	FI	TMFS
A	56±27	58±17	30±12	35±19	92±53
B	53±31	56±16	31±12	31±22	82±78
P values	0.482	0.535	0.732	0.59	0.602

(FI: Fertility Index=Sperm concentration×%Motile sperm/100; TMFS: Total Motile Functional Sperm=Ejaculate volume×Sperm concentration×%Motile sperm/100×(100-%Abnormal morphology) /100. Values are given as means plus or minus standard deviations.)

Statistical analysis

119 unilateral valid cases were described regarding the distribution of age, associated symptoms/signs, grade, and semen parameters. The relative frequencies of the associated symptoms/signs of the grades were compared using the chi-square test. The relationship of the semen parameters with different grades was assessed by independent sample t-test and Mann-Whitney U test.

RESULTS

Patients' age ranged from 18 to 38 years (modes were 19, 20, and 21 years, Mean±SD: 23±4.4). Number of cases of the different grades were as follows: grade 1: 9 cases (8%), grade 2: 63 cases (53%), and grade 3: 47 cases (39%). There were 3 bilateral cases (2.3%) in our series. The most common associated symptom/sign was pain followed by 'mass' (Table I).

To evaluate the clinical significance of the grading system, cases were categorized into two groups: group A grade 1 and grade 2 varicocele cases and group B grade 3 cases. Due to the low number of grade 1 cases we placed them in one group with grade 2 cases (grade 1 varicocele cases are less likely to be diagnosed and referred by physicians). The differences in the relative frequencies of the associated symptoms/signs of the two groups were tested and no significance at 0.05 was found (Table I).

Mean sperm concentration was 60.3 million per cubic centimeter. Semen parameters (sperm concentration, percent motile sperm, percent abnormal morphology, fertility index, and total motile functional sperm) of the cases of the two groups whose tests were done at the reference laboratory (each group 26 cases) were compared and no significance was found at 0.1 and 0.05 as well (through the comparison of the means (Table II) and the means of ranks). As we included all the cases for this comparison, still no significant difference was found.

DISCUSSION

Probably pain as being the most common associated finding is the most remarkable point in our study. Two arguments can be made: firstly our patients were mostly single young conscripts who were less active sexually and more active physically and secondly there are screening programs in our garrisons and most of the cases were referral, so associated findings were not equal to spontaneous complaints by the patients. Association of pain with physical exercise and sexual continence has been mentioned by authorities.[1,10]

Our data shows no relationship between size and semen quality. Looking at the means and the standard deviations of the indices, besides some random variation, one can not distinguish any meaningful difference; data seems to be drawn exactly from the same population (Table II). Grading did not imply any difference in the relative frequencies of the associated symptoms/signs either (Table I). This lack of significance of varicocele size has been reported by others as well.[7,8] Two features distinguish our cases from Steckel, Dicker, and Goldstein's patients (in whom they proved the presence of a negative correlation)[10]: the average age of the patients (23 vs. 34 years) and the complaint of the cases (pain and/or mass vs. infertility). It may mean that semen analysis of varicocele cases will deteriorate as they age,[3,11] with larger varicoceles causing more damage or that men who complain of painful varicoceles (as opposed to infertility) tend to have a relatively normal semen analysis regardless of varicocele grade.

Because of remarkable variation in the semen parameters in an individual, it is recommended that semen analysis be done at least twice; however, it is unlikely that this would have changed the results of our study. In most of the patients, semen parameters were not found to be abnormal and no indication for further testing was evident. We controlled other sources of variation (laboratory, considerations for preparation, collection, and evaluation and technicians) as well.

CONCLUSION

Pain could be the most common associated symptom/sign in young single physically active varicocele cases (as in our mostly conscript cases). The relationship between varicocele size and semen quality does not seem to be consistent. Varicocele grade also does not affect relative frequencies of associated symptoms/signs.

ACKNOWLEDGEMENT

We should like to thank Dr. Farshid Alaeddini and Mr. Arshia Seddiq for reading the manuscript and for the positive contribution of Mr. Ranjbar at the urology clinic.

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