CASE REPORT

The role of transrectal ultrasonography in the elucidation and treatment of an unusual case of azoospermia

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We report a case of male infertility with low ejaculate volume and azoospermia. An infected seminal vesicle cyst that induced partial obstruction of the seminal duct system was diagnosed by transrectal ultrasound. After transrectal cystic aspiration and decompression, a normal spermogram was obtained.

Key words: azoospermia/infertility/transrectal ultrasonography

Introduction

Azoospermia accounts for 20% of male infertility, of which 40% of the cases are due to seminal duct disorder (Jarow et al., 1989). Partial obstruction of the seminal duct system, such as ejaculatory duct obstruction, has been neglected until recently due to the invasive nature of the evaluative procedure.

Historically, vasography has been the optimum imaging method for diagnosis of the ejaculatory ducts and seminal vesicles, but it is an invasive procedure with significant morbidity.

In certain cases of sterility with complex malformations of the ejaculatory ducts, the vesicles are sometimes large and not empty after the ejaculation of a small amount of semen which does not contain fructose and/or few or no spermatozoa (Patterson and Jarow, 1990).

High frequency ultrasound scans with transrectal transducers provide accurate, cost-effective and non-invasive means of assessing the integrity of the distal seminal tract. Thus, in infertile men with low semen values for whom retrograde ejaculation has been ruled out, endorectal sonography may clarify the anatomical abnormalities responsible for infertility.

Case report

A 40 year old man presented with a history of secondary infertility of 3 years duration. Azoospermia was found in repeated spermograms with ejaculatory volumes ranging between 1.4 and 1.8 ml. Low fructose concentrations of 8–18 mg%, high calcium values of 50–60 mg% and very high citric acid concentrations of 1803–2000 mg% were found. Post-ejaculate urinalysis revealed no spermatozoa. Hormonal profiles were within normal limits with testosterone 5.6 ng/ml, FSH 3 mIU/ml and LH 3.8 mIU/ml.

Transrectal ultrasound (TRUS) demonstrated enlargement of the seminal vesicles, primarily on the right side. The echo texture was of unclear echogenicity. An inflammatory cyst of the seminal vesicles was inspected, and following a course of broad spectrum antibiotics (Tarivid, Ofloxacin, 200 mg b.i.d.: Kinolone Hoechst AG, Frankfurt Am Main, Germany), TRUS-guided aspiration of the cysts was performed (Figure 1). A sample of 2 ml of cloudy aspirate, rich in leukocytes, was withdrawn. Antibiotic therapy was continued for 3 weeks. Two months later, TRUS showed a normal seminal vesicle tract and two spermograms, repeated at intervals, had normal values for volume, (3.3 ml), concentration, (153 × 10^9/ml), 28.9% motile spermatozoa with 24% normal morphology. Despite low fructose concentrations of 18 mg% (normal range 20–600 mg%), calcium and citric acid concentrations rose to very high values (50 and 1803 mg% respectively). Their normal ranges generally are 349–671 and 7.4–26 mg% respectively. Zinc concentrations were 165 μg/ml (normal range 80–230 μg/ml).

Discussion

Azoospermia may indicate blockage of sperm transit rather than an absence of sperm production. Whenever a normal hormonal profile is found and retrograde ejaculation is ruled out as a cause of low ejaculate volume, endorectal sonography should be employed to elucidate between congenital absence of seminal vesicles or vas deferens and obstruction of the spermatic ductal system. This less invasive modality has almost completely replaced the vasogram for evaluating these internal structures in infertile men, thus decreasing the latter's associated risks of vasal scarring and subsequent obstruction.

The obstruction of the ejaculatory duct can occur as a result of extrinsic compression by a large seminal vesicular cyst. This is usually a congenital anomaly that results from a hypoplastic kidney with an ectopic ureter emerging into the seminal vesicle or ejaculatory duct (Heaney et al., 1987).

Transrectal sonography will reveal a laterally positioned anechoic mass where the seminal vesicle should be. Such a cyst may obstruct the ejaculatory duct and may be treated
Transrectal ultrasonography in azoospermia

Figure 1. The seminal vesicle cyst before (a) and following (b) ultrasound-guided aspiration. The finding is marked by dashed lines.

by transrectal resection (TURED) or be perineally drained (Shabsigh et al., 1989). However, those drained perineally tend to recur.

In our patient, after the exclusion of retrograde ejaculation and hormonal imbalance, the low fructose concentration in the ejaculate, together with high calcium and citric acid concentrations, suggested seminal vesicle disorder with the ejaculate originating primarily from the prostate gland. Thus, TRUS proved to be the method of choice to elucidate his seminal duct pathology. Furthermore, TRUS-guided cystic aspiration confirmed our differential diagnosis and was of therapeutic value to restoration of his fertility potential.

Because of the bilaterality of the findings, the turbid sono-
graphic echogenicity, and the relatively late appearance the most acceptable aetiology is inflammation and the diagnosis of 'vesiculitis' is the most plausible. Antibiotic therapy is mandatory in this case; no further diagnostic work-up or surgical intervention is needed since infertility is the sole complaint.

For a pragmatic approach, sperm freezing is suggested in the event that the inflammatory process will recur. A variety of rare congenital anomalies can be demonstrated by ultrasound scanning applied either abdominally or transrectally. Ultrasound provides a unique insight into the function and pathology of the ejaculatory tract that may affect fertility and may reveal new diagnostic criteria to explain some of the more unusual cases of infertility.

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References

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Figure 2. Normal seminal vesicle (arrow) on longitudinal section (a) and transverse section (b).