Andrology and fertility

TRUS-guided needle drainage of a prostatic cyst for treatment of male infertility

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Introduction

Male infertility is a common complaint encountered on an outpatient basis in urology. The initial evaluation and diagnosis of an infertile patient requires a stepwise approach beginning with a thorough history and physical. Infertility can be multifactorial, with many underlying pathologies. One such etiology of infertility is any defect in sperm transport from the testes to the end of the male reproductive tract; this would include a mechanical obstruction such as a prostatic cyst.

Case presentation

A 28 year old Caucasian male was referred to urology for evaluation of primary infertility. He presented with his wife after being unable to conceive for approximately 1 year with unprotected intercourse. The patient's primary care provider performed an initial semen analysis which revealed low volume ejaculate and virtual azoospermia. Subsequent laboratory analysis included complete blood with differential, complete metabolic panel, serum estradiol, follicle stimulating hormone, luteinizing hormone, prolactin, testosterone, thyroid stimulating hormone, and dehydroepiandrosterone sulfate. Pertinent findings from this workup included a normal follicle stimulating hormone, luteinizing hormone, prolactin, and thyroid stimulating hormone. However, serum testosterone was found to be low at 214.1 ng/mL for which the patient began clomiphene therapy that was titrated to 50 mg in order to normalize serum testosterone levels to 614.8 ng/dL. Repeat semen analysis one month later demonstrated similar findings of low ejaculate volume and virtual azoospermia.

On his initial presentation to urology, the patient presented with the aforementioned findings and otherwise had no urogenital complaints. The patient also had an unremarkable past medical history, past surgical history, and family history. The patient endorsed a smoking history and socially drank alcohol. On physical exam, the patient was noted to have a normal genitourinary exam with an orthotopic meatus and no palpable scrotal masses or varicoceles.

Retrograde ejaculation analysis was completed 4 weeks following urologic consultation and demonstrated virtual azoospermia with no sperm found on urinalysis. The patient subsequently underwent transrectal ultrasound of the prostate and seminal vesicles one week later which revealed a 2 × 2.3 × 3.0 cm midline prostatic cyst and bilateral seminal vesicle dilation (see Fig. 1).

Three months following the diagnostic TRUS, the patient was seen in the office for TRUS-guided needle aspiration of the prostatic cyst. Under ultrasound guidance, lidocaine was injected into the base of the cyst, and the cyst was then aspirated to yield 9 mL of yellow fluid. The right seminal vesicle was likewise aspirated to yield 2 mL of fluid. Analysis of the prostatic fluid aspirate did not reveal any motile sperm. However, the seminal vesicle fluid aspirate revealed a sperm count of 5000 with 16% motility.

Approximately 3 weeks following the procedure, the patient's repeat semen analysis revealed an increase in seminal volume to 1.3 mL with a sperm count of 1 million and 15% motility. This amount was considered sufficient to attempt cryopreservation with possible in-vitro fertilization.

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Discussion

Male infertility should be suspected in the event that a couple is unable to conceive following one year of frequent, unprotected sexual intercourse. Surprisingly, up to 50% of otherwise healthy couples will conceive within another year thus making further infertility workup a matter of clinical judgement. The differential diagnosis of male infertility is broad including endocrine and systemic disease, primary testicular failure of spermatogenesis, disorders in sperm transport, and idiopathic causes. As in our case, the workup of infertility often includes a semen analysis, with low volume semen alongside oligo- or azospermia suggesting either a disorder of sperm transport from the testes or ejaculatory duct obstruction.

One such cause of obstruction is a prostatic cyst. Prostatic cysts are considered a common finding, often incidental on transrectal ultrasonography. Estimated incidence from autopsy was found to be 1–7.9%. They are often small, teardrop shaped, and lie in the midline posterior to the prostatic urethra. Prostatic cysts are thought to be one consequence of Müllerian remnants in the male. Detailed imaging such as MRI can be considered in cases where soft tissue detail is desired or findings suspicious for malignancy are present.

While a majority of prostatic cysts may be asymptomatic, cases are reported in which these cysts may lead to spontaneous hemorrhage and hematospermia, obstructive urinary symptoms, chronic pain, or infertility.

One proposed clinical algorithm for the treatment of prostatic cysts causing infertility begins with needle aspiration of the cyst with follow-up semen analysis in 1 month. Failure of semen to normalize prompts transurethral resection of the ejaculatory duct and unroofing of the prostatic cyst with follow-up semen analysis. However, in cases where the prostatic cyst communicates with the seminal vesicles, semen analysis failed to normalize in 7 cases until unroofing was performed.

Conclusions

Prostatic cysts are a common entity in males that are often asymptomatic. In cases where fertility becomes impaired secondary to the obstruction of the ejaculatory ducts, treatment is warranted with either transurethral unroofing or needle aspiration under ultrasound guidance. As demonstrated in our case, needle aspiration provides a minimally invasive intervention that can be attempted before resection. In future follow-up, if semen analysis fails to continue to normalize and fertility is still impaired, more invasive options such as cyst unroofing or resection may be attempted. If sperm is not able to be obtained after aspiration of the prostatic cyst and seminal vesicles or after unroofing, consideration should be given to in-vitro fertilization/intracytoplasmic sperm injection with the use of testicular sperm, donor insemination, or adoption.

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