Incidental seminoma in nonobstructive azoospermia: a case report

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Objective: To report on the incidental finding of invasive seminoma in a patient with nonobstructive azoospermia during microdissection testicular sperm extraction.
Design: Case report.
Patient(s): A single patient diagnosed with nonobstructive azoospermia underwent microdissection testicular sperm extraction, and an incidental finding of invasive seminoma was made upon histopathological analysis.
Result(s): An incidental discovery of invasive seminoma was observed in the sample pathology obtained during the microdissection testicular sperm extraction. Consequently, the patient underwent further diagnostic workup and a radical orchiectomy.
Conclusion(s): Men with male factor infertility are at increased risk of testicular cancer. As such, it is imperative to incorporate a thorough physical examination and relevant imaging into their diagnostic process. Additionally, it is advisable to include histopathological analysis for all individuals undergoing microdissection testicular sperm extraction. (F S Rep® 2024;5:211–3. ©2024 by American Society for Reproductive Medicine.)
Key Words: Nonobstructive azoospermia, male factor infertility, seminoma, microdissection testicular sperm extraction, case report

INTRODUCTION

Microdissection testicular sperm extraction (microTESE) is the preferred technique for recovering sperm in men affected by nonobstructive azoospermia (NOA). On a global scale, approximately 1% of the male populace is impacted by NOA (1). Previous studies have suggested that 1%–6% of men with infertility will have an undiagnosed medical condition at the time of diagnosis (2). Men with azoospermia face a lifelong increased risk of developing cancer (3). A strong link between abnormal semen parameters and testicular cancer has been established (4, 5). Despite this knowledge, there is limited published information detailing the risk of subclinical carcinoma or intratubular germ cell neoplasia in men diagnosed with infertility. Typically, affected patients will have a testicular mass during the evaluation and diagnosis of infertility. We present a case of unsuspected microscopically invasive seminoma in a man who presented with NOA and no detectable testicular lesion on preoperative imaging.

CASE REPORT

A 33-year-old male patient with primary infertility with his 23-year-old wife was diagnosed with NOA on the basis of azoospermia with testicular atrophy and a follicle-stimulating hormone level of 28.7 IU/L. He was on no medications at the time of evaluation. The patient had a previous diagnosis of VACTRL syndrome, with a solitary kidney, trachea-esophageal fistula, spinal disorder, and imperforate anus. He had previously undergone bilateral inguinal orchiopexy at the age of 1 year, spinal surgery, and anorectal pull-through as well as esophageal surgery for his gastrointestinal anomalies.

On physical examination, the patient had testicular volumes of 4 and 3 mL with no palpable intratesticular masses. Bilateral vasa deferentia were palpable.

Hormonal evaluation is provided in Table 1. His karyotype was 46, XY. No Y chromosome microdeletions were detected. Abdominal computed tomography showed a solitary left kidney and bilaterally enlarged cystic seminal vesicles. Scrotal ultrasound identified a tubular cystic structure in the right scrotum suspected as thrombosed veins and bilateral epididymal head cysts, with no intratesticular lesions detected. Testicular tumor markers were subsequently negative.

Treatment was provided with concurrent sperm retrieval during a

Received November 28, 2023; revised April 8, 2024; accepted April 10, 2024.
Supported in part by the Frederick J. and Theresa Dow Wallace Fund of the New York Community Trust (to J.G.).
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F S Rep® Vol. 5, No. 2, June 2024 2666-3341

https://doi.org/10.1016/j.xfre.2024.04.001

TABLE 1

Sex hormone levels before surgery.

Hormones	Results
Testosterone (ng/dL)	551
LH (mIU/mL)	4.5
FSH (mIU/mL)	28.7
Estradiol (pg/mL)	50

Note: FSH = follicle-stimulating hormone; LH = luteinizing hormone.

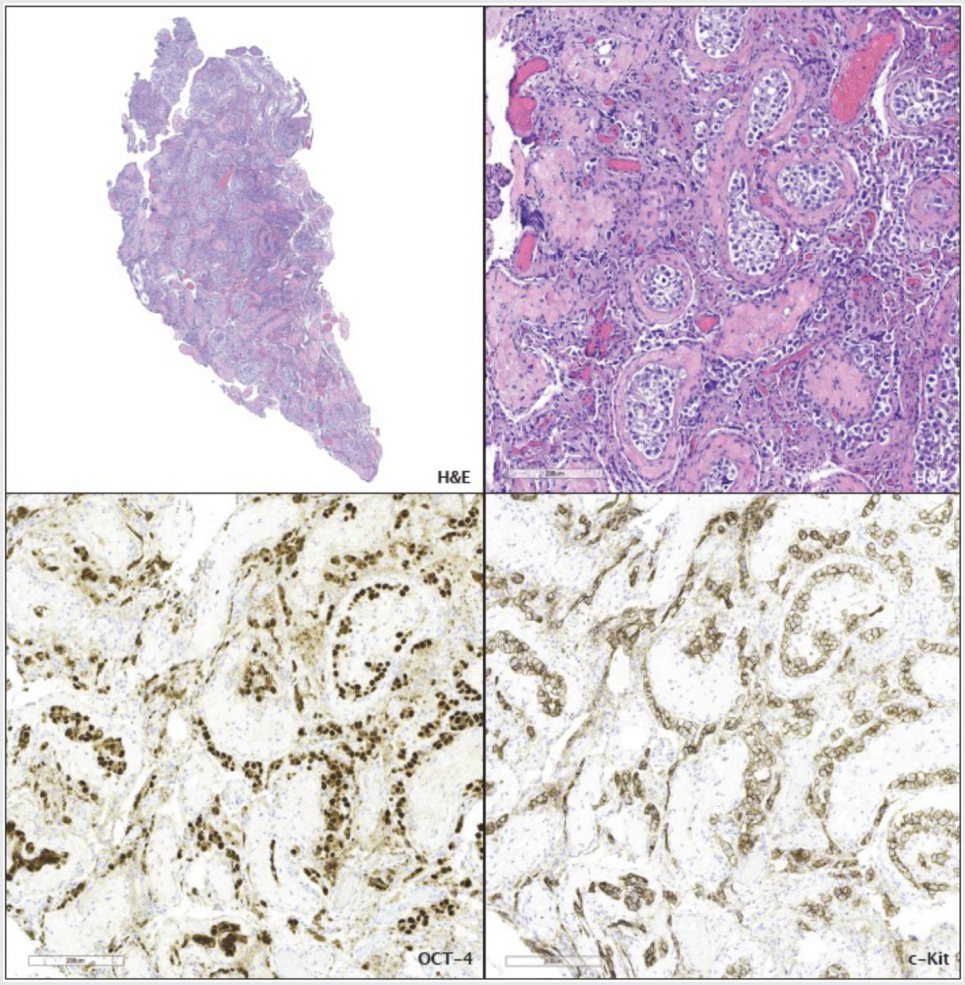
Gal. Incidental seminoma in NOA. F S Rep 2024.

programmed in vitro fertilization cycle for the patient's partner. Right microTESE demonstrated multiple foci of enlarged seminiferous tubules, and 1,760 sperm were identified in a single sample from a mechanically dispersed specimen from the right testis. A diagnostic testicular biopsy was performed on the right from a randomly selected normal-appearing tissue region for routine pathological assessment. The histopathology results showed minute foci of invasive seminoma in a background of germ cell neoplasia in situ (GCNIS) (Fig. 1). Subsequent computed tomography of the chest, abdomen, and pelvis showed no evidence of metastases, and tumor markers were negative. The beta-human chorionic gonadotropin and alpha fetoprotein levels were <5 IU/L and 4.4 ng/mL, respectively.

On postoperative day 9 after the initial microTESE, the patient underwent a right inguinal radical orchiectomy, with en bloc resection of the scrotal incision. Oncologic testicular sperm extraction was performed after the removal of the testis.

Pathology of the resected residual testis and spermatic cord showed microscopic foci of invasive seminoma that was confined to the testis with GCNIS. Residual testis evaluation showed seminiferous tubules with tubular atrophy, maturation arrest, and rare foci of hypospermatogenesis as well as Leydig cell hyperplasia. No angiolymphatic invasion was observed (Fig. 1). Because of the rarity of this pathology, a

FIGURE 1



Testis biopsy with incidental seminoma. H&E images at low and high magnification are illustrated on top (20× and 100×, respectively). The seminiferous ubules demonstrate germ cell neoplasia in situ and invasive seminoma, highlighted by immunohistochemistry for OCT-4 and c-Kit.

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multi-institute collaboration is required to assess its incidence. Patient consent was provided for publication of this report.

DISCUSSION

Men with severe male factor infertility, including NOA, are at increased risk of cancer in general—specifically testicular cancer (3, 5–7). In addition, cryptorchidism is associated with a higher risk of testicular cancer (5, 8). Some germ cell tumors can be detected on physical examination or scrotal ultrasound. However, ultrasound is not routinely required for evaluation of men with infertility (9).

For this patient, neither physical examination nor imaging showed any evidence of testicular malignancy. Even during microTESE, there was no physical evidence of testicular tumor. The sole suggestion of seminoma arose from the biopsy conducted during the microTESE procedure. Despite the presence of invasive germ cell tumor, sperm were retrieved during both the primary microTESE and subsequent oncologic testicular sperm extraction procedures.

In our experience with over 3,000 men with NOA, a history of cryptorchidism and subsequent orchiopexy was present for >450 men. However, this is the first case of GCNIS or invasive tumor that we have observed that was not suspected preoperatively. Although rare, the presence of tumor suggests that testicular tissue histopathological analysis should be routinely considered during the treatment of men with NOA. Failure to routinely perform histologic analysis during microTESE could result in local tumor contamination that may increase the treatment burden for men who are subsequently diagnosed with a germ cell tumor. Given the uncommon nature of this pathology, a multi-institute collaboration is essential to evaluate its incidence.

CRediT Authorship Contribution Statement

Jonathan Gal: Writing – original draft, Conceptualization. **Juan Miguel Mosquera:** Writing – original draft. **Brian D. Robinson:** Writing – original draft. **Peter N. Schlegel:** Writing – original draft, Supervision.

Declaration of Interests

J.G. has nothing to disclose. J.M.M. has nothing to disclose. B.D.R. has nothing to disclose. P.N.S. has nothing to disclose.

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