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CASE REPORT

Impalpable Testicular Seminoma Identified on Sonoelastography

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Abstract The role of sonoelastography in diagnosing cancerous masses has increased since the advent of elastography as an ultrasound modality. Its ability to display differences in the mechanical properties of cancerous masses compared to normal surrounding tissue has shown benefit in increasing the accuracy of diagnosing malignant breast and thyroid masses and has shown early potential in accomplishing better targeted prostate biopsies. To date, the literature is limited in the number of studies describing the use of sonoelastography for testicular masses. We describe a 34-year-old man who presented with an incidental finding of an impalpable hypoechoic testicular mass on grayscale ultrasound during an infertility work-up. Sonoelastography was performed displaying intermediate testicular elastic properties. Upon frozen section of the mass during surgical exploration, classic testicular seminoma was diagnosed and subsequent radical orchiectomy was performed. We would like to use this atypical presentation of testicular seminoma to review the potential role of elastography for diagnosing testicular cancer.

Introduction

Classic seminoma usually presents as a painless, hard, palpable testicular mass, making clinical evaluation the initial and most important step in diagnosis [1]. The impetus for more innovative ultrasound techniques comes as a result of the inability of conventional B-mode ultrasound to detect structural and histological characteristics of testicular tumors [2]. Sonoelastography of testicular

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masses generally demonstrates a very distinct pattern given the increased tumor stiffness compared to normal surrounding testicular tissue [3].

We present a case of testicular seminoma with an atypical presentation of a nonpalpable mass seen on ultrasound diagnosed during work up for infertility.

Case report

A 34-year-old man presented to his primary care physician with a chief complaint of inability to conceive with his wife for 6 months. The patient was otherwise healthy and exercised vigorously 3 times a week. He denied genital trauma. He reported a previously history of a sexually transmitted disease treated effectively 10 years previously. He has a 15-pack/y history of cigarette smoking and drinks 12—16 alcoholic beverages/wk. Vitals and physical examination were normal. Testicular examination demonstrated normal sized testes without tenderness and without palpable masses. Scrotal ultrasound was initially performed using real time and color Doppler imaging. Ultrasound demonstrated 20 cc testes bilaterally with a 2.5 cm $\times$ 1.1 cm $\times$ 2.5 cm irregular hypoechoic mass located in the posterior inferior aspect of the right testis, showing internal flow on color flow Doppler (Fig. 1A). Semen analysis demonstrated a markedly impaired semen quality with a volume of 3.75 ml, sperm concentration of 5.00 $\times$ 10^6/mL, total count of 18.75 $\times$ 10^6/mL, and motile sperm count 3.00 $\times$ 10^6/mL. Hormonal work up revealed follicle-stimulating hormone, luteinizing hormone, and testosterone all within normal range. Prolactin was slightly elevated at 17.45 ng/mL (normal range, 4.04—15.2 ng/mL). Given the ultrasound findings, serum testis tumor markers were obtained and found to be within the normal range (B-human chorionic gonadotropin $<$ 2 mIU/ml, α-fetoprotein = 5.6 ng/ml, and lactate dehydrogenase = 133 U/L).

Patient was referred to our institution for further evaluation. Due to the clinical presentation of an impalpable mass, unusual ultrasound findings, and negative tumor markers, the patient underwent shear wave sonoelastography to characterize the hypoechoic right testicular lesion further. The study demonstrated a heterogeneous lesion measuring 2.6 cm $\times$ 1.0 cm in the transverse plane (Fig. 1B, lower pane) and 1.8 cm $\times$ 1.1 cm in the sagittal plane with decreased vascularity and evidence of increased stiffness (intermediate stiffness; Fig. 1B, upper pane) compared to normal surrounding testicular tissue, raising concern for testicular malignancy. Subsequent computed tomography scan of chest, abdomen, and pelvis did not identify any evidence of regional or metastatic disease. The patient was counseled and consented for inguinal exploration with testicular biopsy and frozen section with plan for partial versus radical orchiectomy as determined by the histology on frozen section.

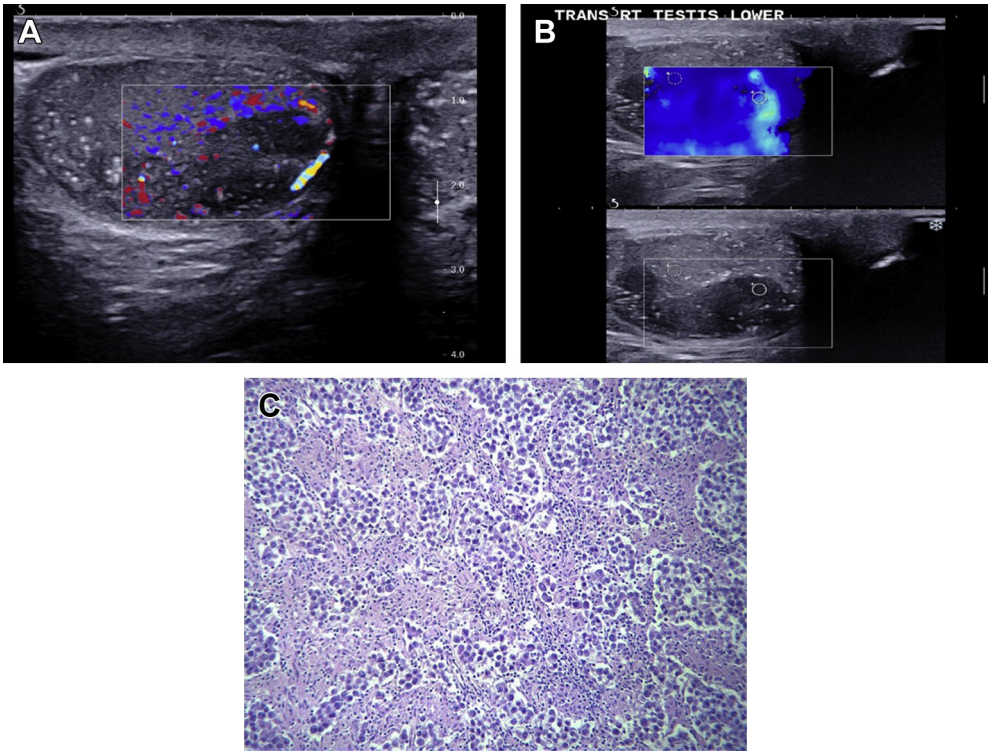

Fig. 1 Impalpable testicular mass in a 34-year-old man displayed on multiple ultrasound modalities. (A) Irregular hypoechoic mass located in the posterior inferior aspect of the right testis, measuring 2.5 cm $\times$ 1.1 cm $\times$ 2.5 cm, showing internal flow on color flow Doppler, and numerous hyperechoic spots representing microlithiasis. (B, lower pane) Hypoechoic testicular mass measuring approximately 2.5 cm on regular grayscale ultrasound. (B, upper pane) Same testicular mass on ultrasound elastography showing areas of intermediate strain represented as bright green color. (C) Histological characteristics of classic seminoma. Shows nests of proliferating neoplastic cells separated by fibrous septa with infiltrating lymphocytes within fibrous septa.