

Introduction

Seminoma is curiously characterized as both a rare and common tumor. As a germ cell tumor, it accounts for only 1% of all malignancies in men. At the same time, it is the most common malignancy afflicting young men ages 15 to 35, with a reportedly rising incidence. Despite this, seminomas retain an excellent prognosis, the majority of which are diagnosed at Stage 1.

Clinically, seminomas present as palpable, painless, unilateral testicular lumps appearing hypoechoic at ultrasound. Grossly, lobulations formed by fibrous septa are commonly described. Radiographically, however, seminoma can be indistinguishable from other benign and malignant mimics, all varying in their necessary course of treatment.

Existing literature supports septation as a characteristic finding of seminoma with potential utility in distinguishing it from benign diagnoses that favor organ-sparing techniques or more malignant tumors requiring an aggressive course of action. However, the radiographic-pathologic correlation of this feature is underreported. This case, in which septation was identified at the gross bench but not the pre-operative ultrasound findings, illustrates why gross examination by the pathologists' assistant functions as a critical checkpoint in identifying architectural features that pre-operative imaging may not reliably capture, and raises a broader question about the translational gap between sonographic and pathological characterization of a feature with meaningful implications for the differential diagnosis of intratesticular masses.

Clinical History and Case Presentation

A 25-year-old male presented with a painful, indurated, palpable mass in his left testicle. He reported that the mass was present for many years, but 3 months prior to seeking treatment he begun experiencing pain in addition to noticing an increase in size. A preliminary scanning ultrasound confirmed the presence of a hypoechoic mass that appeared to comprise the majority of the left testicle. The patient underwent a radical orchiectomy.

Pathologic evaluation determined the mass to be Stage 1A pure seminoma according to AJCC Pathologic Stage (8th edition). Serum tumor markers were within normal limits. The patient's treatment plan consisted of surveillance; a history and physical (H&P) and CT abdomen/pelvis (CTAP) every 4-6 months for a year, as well as a follow up with urology. Because the patient's tumor markers were normal post op, they were not deemed necessary to continuing surveying.

Gross Description

The specimen received was a left radical orchiectomy that was bisected to reveal a well-circumscribed, pink-tan soft lobulated mass (3.5 x 3.5 x 2.6cm) involving the majority of the parenchyma. The mass extended less than 0.1cm from the tunica albuginea and did not grossly appear to involve the epididymis, tunica vaginalis or spermatic cord.

In addition to the mass, there was a focal area of tan-white indurated parenchyma (2.0 x 1.5 x 1.5cm) identified at the distal aspect of the specimen, abutting the mass but separated from it by a thin layer of fibrous tissue. Together, the mass and lesion had an overall measurement of 4.8 x 4.0 x 2.6cm. The specimen was otherwise grossly unremarkable.

Figures



Fig. 1 Gross image of left testicle with well-circumscribed seminoma

Testicular Structure

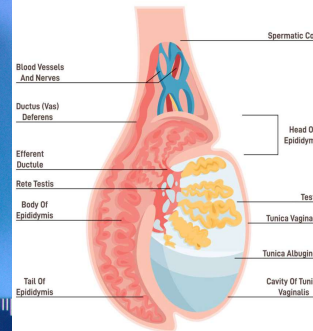


Fig. 2 Testicular Structure

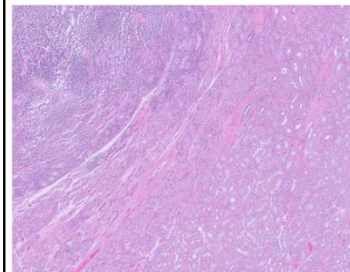


Fig. 3 Tumor to adjacent normal parenchyma

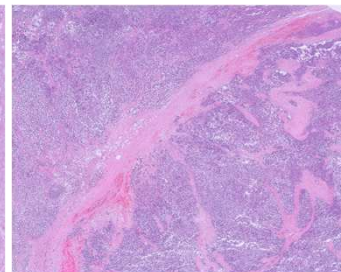


Fig. 4 Tumor septation

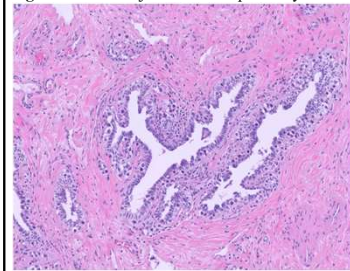


Fig. 5 Tumor invasion of the rete testis

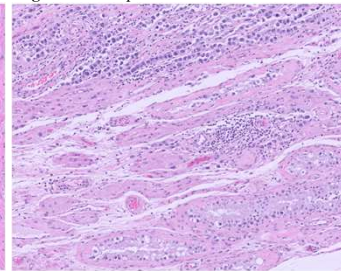


Fig. 6 Germ cell neoplasia in situ (GCNIS)

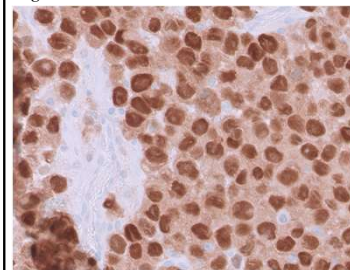


Fig. 7 Positive OCT 3/4 stain

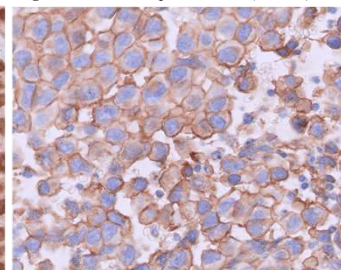


Fig. 8 Positive CD-117 stain

Discussion

The seminoma specimen, which measured greater than 3cm in size, was staged pT1b, N0, M0, S0. The S accounts for staging tumor markers, a unique consideration for testicular cancers. In this case, AFP, β HCG and LDH were within normal limits. Invasion of the rete testis observed histologically (Figure 5) does not upstage the tumor, as CAP staging still defines this as limited to the testis.

Special stains for seminoma include OCT 3/4 and CD-117. OCT 3/4, used to detect germ cell tumors, is positive when nuclei stain brown (Figure 7). CD-117 is a membrane stain regularly expressed in seminoma. When positive, it stains the membrane brown which is visualized by a blue counterstain (Figure 8).

Germ cell neoplasia in situ (GCNIS) (Figure 6) was an additional finding. A proliferation of germ cells was observed within the seminiferous tubules, a precancerous consideration of germ cell tumors.

Finally, the tumor grossly appeared to be 2 distinct nodules. Upon microscopic examination, they were revealed to belong to one primary tumor separated by fibrous septa (Figure 4). The tan-white indurated parenchyma was the same tumor histologically, but with more fibrin that resulted in its tan-white appearance. It is important to describe the relationship between pathologies for this reason and recognize instances where it may be appropriate to provide an overall measurement for the pathologies, as was accomplished in this case.

Conclusion

The septation identified grossly but absent from imaging in this seminoma specimen had no clinical consequence on staging or treatment in this case. Nonetheless, this discordance underscores the pathologists' assistant's role as the bridge between imaging and gross pathology. Although imaging provides a foundation for pathologic diagnosis, it is an incomplete picture. Pathologists' assistants should review patient history to prepare for a specimen and attempt to correlate gross findings to imaging when possible. At the same time, they must remain alert to inconsistencies between what they read in pre-operative reports and what they see on the bench.

This case further serves as a hypothesis-generating contribution to limited literature on imaging-pathology correlation in seminoma, suggesting an area of further research in how increased sonographic awareness of septation can be utilized to improve radiographic distinction of testicular tumors. Ultimately, the pathologists' assistant serves as a diagnostic checkpoint where macroscopic findings absent from imaging are identified, dictated, and integrated into a more complete clinical picture.

References

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