

Necrotic Seminoma of the Testis

Establishing the Diagnosis With Masson Trichrome Stain and Immunostains

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● We describe an infarcted mass in the testis containing "ghost" cells suspicious for neoplasm. The entire lesion was necrotic. A Masson trichrome stain greatly improved nuclear and cytologic detail, confirming the suspicion of neoplasm. Placental alkaline phosphatase revealed specific membrane staining of the neoplastic cells and established a diagnosis of seminoma. Masson trichrome plus selected immunostains offer a promising approach to the diagnosis of certain necrotic neoplasms.

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In this article, we describe an infarcted mass in the testis containing "ghost" cells suspicious for neoplasm. The entire lesion was necrotic. Using Masson trichrome stain and ancillary immunostains, the diagnosis of seminoma was established.

REPORT OF A CASE

A 47-year-old man came to the emergency room complaining of acute pain in the right testis and flank that had been present for 1 day. The patient's medical history revealed an episode of right testicular swelling 2 years earlier, which had been treated with antibiotics. Symptoms improved at that time, and he did not return. On examination he was afebrile. The right testis was tender and enlarged. The left testis was unremarkable. Ultrasound revealed a 2.7 × 2.3-cm, round collection of low-amplitude echoes; the differential diagnosis included neoplasm and abscess. Routine laboratory values were normal, and testing for serum human chorionic gonadotrophin was negative. Right radical orchiectomy was performed.

PATHOLOGIC FINDINGS

The testis weighed 28 g and was ovoid, soft, and diffusely enlarged. The tunica albuginea was smooth, pale gray, and glistening, with no evidence of tumor. Transection revealed subtotal replacement of the parenchyma by a circumscribed, semiliquid, soft gray-tan mass resembling an abscess. Cultures were negative. Hematoxylin-eosin-stained sections revealed a necrotic lesion surrounded by a chronically inflamed, fibrotic pseudocapsule and confluent areas of exudates and liquefaction. The pres-

ence of hematoidin bodies identified the process as infarction. At higher power, both large and small ghostlike necrotic cells with indistinct faint nuclei and bright pink cytoplasm were evident (Figure 1). The large cells resembled anaplastic tumor. The entire specimen was embedded, but no viable cells were found.

Masson trichrome stain was performed on sections containing the ghost cells (Figure 2). The nucleus, nucleolus, and cytoplasm of the large anaplastic cells stained blue. The nucleoli were centrally located and prominent. The small cells also stained blue and had a nuclear chromatin pattern characteristic of mature small lymphocytes. The trichrome stain so greatly improved the nuclear and cytomorphologic detail that a tentative diagnosis of seminoma could be made.

To confirm this impression, immunohistochemical stains for placental alkaline phosphatase, leukocyte common antigen (LCA), and keratin were performed. The placental alkaline phosphatase (Dako, Santa Barbara, Calif) showed strong specific membrane staining of the larger necrotic cells, definitively identifying them as seminoma cells (Figure 3). CD45 (Dako and Zymed, San Francisco, Calif) nicely decorated the cell membranes of the smaller cells, confirming them as lymphocytes. Reaction for cytokeratin (Boehringer-Mannheim, Chicago, Ill) was negative.

COMMENT

It is well known that seminomas can exhibit massive necrosis.¹ Usually, enough tumor survives to permit a definitive diagnosis with hematoxylin-eosin-stained sections. Our case is unusual because the tumor was completely necrotic, and microscopic examination of the entire testis failed to reveal any viable tumor. In fact, the initial impression of the lesion was an abscess, because of areas of liquefaction and the collections of neutrophils. The finding of hematoidin bodies identified the process as infarction.

Dunsmore et al² noted the difficulty encountered in diagnosing a primary mediastinal seminoma with massive necrosis. Despite multiple passes for fine-needle aspiration on 2 occasions, open biopsy was necessary to establish the diagnosis. Sporadic case reports have discussed the possibility of regression³ or total necrosis⁴ of testicular seminoma as the source of metastatic tumor of unknown origin. To our knowledge, this is the first case report of a totally necrotic seminoma presenting in this manner.

We were surprised at how well the Masson trichrome stain demonstrated the nuclear and cytomorphologic de-

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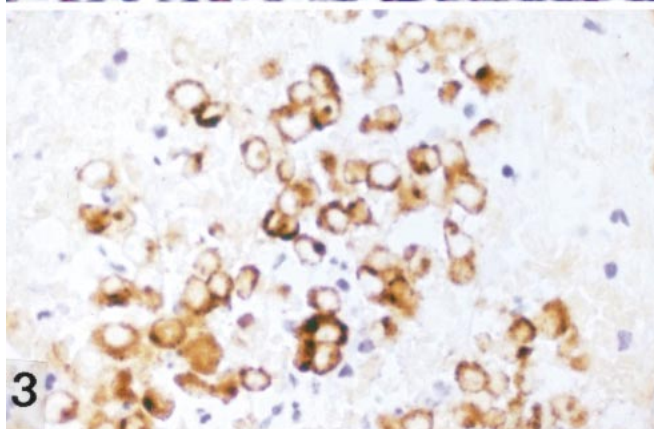
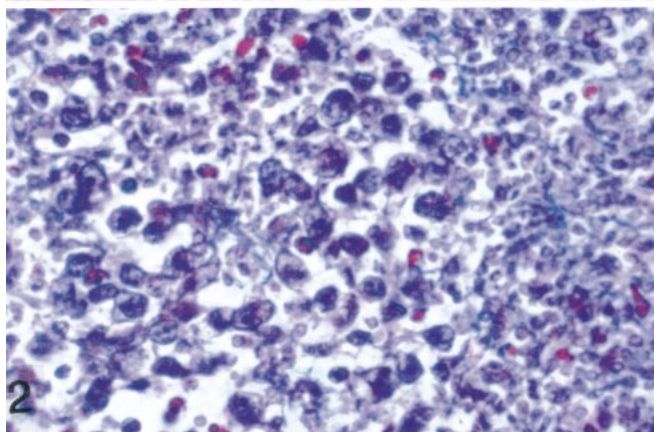
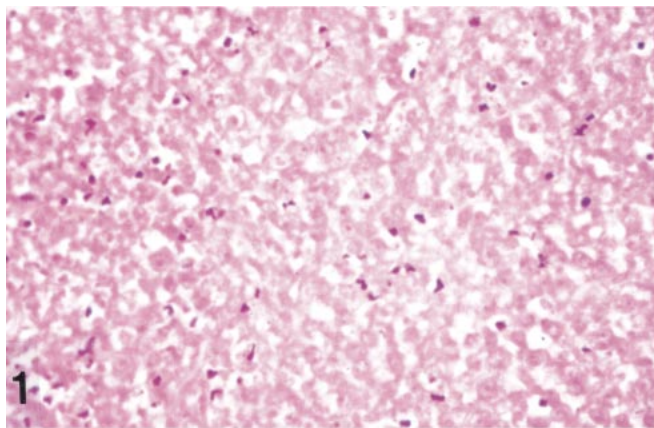


Figure 1. Large and small ghostlike necrotic cells with bright pink cytoplasm and indistinct nuclei are evident (hematoxylin-eosin, original magnification $\times 250$).

Figure 2. Nucleus and cytoplasm of the necrotic cells stain blue. The large cells are anaplastic with prominent nuclei and nucleoli. The small cells resemble lymphocytes (Masson trichrome, original magnification $\times 400$).

Figure 3. Note strong specific membrane staining of the large necrotic cells, consistent with the diagnosis of seminoma (placental alkaline phosphatase, original magnification $\times 400$).

tail of the necrotic cells. Nucleus, nucleoli, and cytoplasm stained with aniline blue. According to M. N. Koss, MD (oral communication, December 1999), the method is used regularly at the Armed Forces Institute of Pathology to investigate necrotic tumors, but we were unable to find a description of this application in the literature. Mostofi and Price¹ mentioned the value of Mallory iron hematoxylin or a reticulin stain in highlighting necrotic seminoma cells, but they did not discuss the trichrome stain.

We were unable to find any reports of the use of placental alkaline phosphatase in diagnosing necrotic seminomas. Several authors have described the value of immunohistochemistry in establishing the lineage of necrotic tumors. Judkins et al⁵ found that thyroglobulin was helpful in evaluating necrotic thyroid tumors. Vega and coworkers⁶ concluded that immunohistochemistry and gene rearrangement provided diagnostic information in evaluating necrotic neoplasms of lymph nodes. Norton et al⁷ found that LCA was useful in confirming the lymphoid nature of an infarcted lymph node. However, Judkins and colleagues⁸ found that reactivity to LCA occurred also in some necrotic carcinomas. They examined 3 different antibodies (keratin, LCA, and S100) in a series of 24 necrotic tumors. Whereas keratin markers were quite reliable, reactions for LCA and S100 were less specific. In addition, S100 was poorly preserved in neoplasms known to be S100 positive.

In conclusion, immunostains appear to be helpful as an ancillary method in classifying necrotic tumors, although the literature indicates that some necrotic tumors may exhibit nonspecific staining. Thus, reliance on immunostains alone may lead to an erroneous diagnosis. The improved morphologic detail achieved by the trichrome stain may allow for definitive diagnosis of a necrotic tumor subtype when used in combination with a selected panel of immunostains. While this approach appears promising, additional studies are needed on a wider range of tumors.

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