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The "burnt-out" testicular (Azzopardi) tumor

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In males, primary germ cell tumors typically present as a testicular mass [1]. On a few occasions, the primary testicular tumor can regress leaving behind only residual testicular scarring, despite the presence of widespread metastatic disease. This scenario represents a "burnt-out" testicular tumor, also known eponymously as an "Azzopardi tumor" (Fig. 1) [2]. In 1961, Azzopardi et al. reported a series of 17 cases of young men who died of metastatic germ cell tumors, in whom the primary testicular lesion was a fibrous scar with minimal or no viable neoplastic tissue, when examined pathologically [2]. These scars often contained calcium, and it was theorized that the primary tumor had infarcted due its propensity for local vascular invasion, with the resulting necrotic area forming a matrix conducive to calcium deposition [2]. When the "burnt-out" appearance is identified sonographically, it should prompt evaluation of the chest, abdomen, and pelvis for metastatic deposits (Fig. 2).

At ultrasound, a burnt-out testicular tumor will often have a focal echogenic area with posterior acoustic shadowing, suggesting calcification (Fig. 3A). Other features which may be appreciated by sonography are cystic or ill-defined hypoechoic areas within the testis, atrophy of the entire testicle compared to the contralateral side, and possibly the presence of microlithiasis, which has been posited to confer some increased risk of testicular malignancy (Fig. 3B) [3, 4]. The most common site of metastasis is the retroperitoneal lymph node stations ipsilateral to the testicular tumor.

It has been suggested that up to 10% of all retroperitoneal germ cell tumors are secondary to a regressed primary testicular tumor, with nonseminomatous germ cell tumors the most common pathologic subtype to present this way [5]. In the series reported by Azzopardi et al., all patients had either choriocarcinoma or embryonal carcinoma as the primary tumor subtype [2]. In the setting of a burnt-out testicular tumor, there are often no specific imaging features to distinguish between tumor subtypes, but serum markers such as alpha-fetoprotein and beta-human chorionic gonadotropin may aid in the differential diagnosis. Recognition of this classic, albeit somewhat rare, disease presentation is critical for accurate diagnosis and treatment.

Fig. 1. A match lit on fire becoming "burnt-out." ("Matches" by Patrik Theander. This work is licensed under the Creative Commons Attribution-Share Alike 2.0 Generic License. To view a copy of this license, visit http://creativecommons.org/licenses/by-sa/2.0/ or send a letter to Creative Commons, 171 Second Street, Suite 300, San Francisco, California 94105, USA).

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Fig. 2. Coronal contrast-enhanced CT of the abdomen demonstrating extensive left-sided retroperitoneal lymphadenopathy with areas of necrosis; the primary lymphatic drainage basin of the left testicle in this patient is ultimately proven to have metastatic mixed germ cell tumor with teratomatous features.

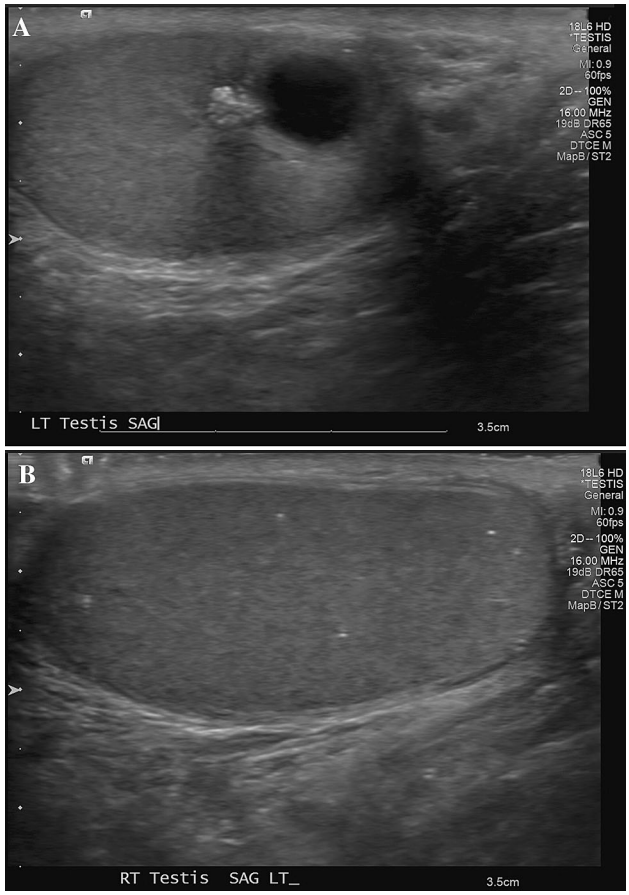

Fig. 3. **A** Ultrasound of the left testicle in the same patient revealing an echogenic scar that includes an area with posterior acoustic shadowing, consistent with calcification adjacent to a rounded cyst. **B** Ultrasound of the larger right testicle demonstrates a background of microlithiasis.

Compliance with ethical standards

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Conflict of interest The authors declare that they have no conflict of interest.

Research involving human and animal rights This article does not contain any studies with human participants or animals performed by any of the authors.

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