

Letters to the Editor

An unusual mixed germ cell tumor of the testis consisting of rhabdomyosarcoma, mature teratoma and yolk sac tumor

Eva Lovrić¹, Dubravka Bobonj Hižak², Melita Perić Balja³, Tanja Leniček⁴, Božo Krušlin⁴

¹Department of Pathology and Cytology, Čakovec County Hospital, Čakovec 40000, Croatia

²Department of Pathology, Bjelovar General Hospital, Bjelovar 43000, Croatia

³Department of Pathology, University Hospital for Tumors, Zagreb 10000, Croatia

⁴Ljudevit Jurak University Department of Pathology, Sestre milosrdnice University Hospital, Zagreb 10000, Croatia

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Correspondence to: Dr Eva Lovrić, Department of Pathology and Cytology, Čakovec County Hospital, Ivana Gorana Kovačića 2E, Čakovec 40000, Croatia. Fax: +385-1379-7244 E-mail: eva.lovric@yahoo.com
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Dear Editor,

We recently encountered a rare case of testicular mixed germ cell tumor (MGCT) in a 32-year-old man. The tumor was composed of a combination of a yolk sac tumor, teratoma and rhabdomyosarcomatous somatic type malignancy.

The patient presented with left testicular swelling and pain. Physical examination, ultrasonography and computed tomography revealed a tumor in the left testicle. Alpha feto-protein (AFP) was elevated (720 mIU mL⁻¹; normal reference range: 0–9 mIU mL⁻¹). A simple orchiectomy was performed.

Grossly, the tumor was tan and well circumscribed, measuring 7.0 × 6.0 × 4.5 cm³, showing a soft and yellow cut surface, with areas of cartilaginous tissue and only a slim margin of residual testicular tissue. Away from the main mass there was an additional well-circumscribed nodule (12 mm in diameter) (Figure 1A).

Routine formalin-fixed, paraffin-embedded tissue sections were stained with hematoxylin and eosin. An additional immunohistochemical stain for desmin, myoglobin and myogenin (DAKO, Glostrup, Denmark) was performed on a representative section of the tumor.

Microscopically, the tumor was composed of a yolk sac tumor (50%) and a mature teratoma (30%) germ cell component associated with a somatic type embryonal rhabdomyosarcoma component (20%). The

size of the largest focus of the rhabdomyosarcoma component is 12 mm. The yolk sac tumor showed a microcystic pattern, glandular structures, mesenchymal stroma, and partly micropapillary structures with perivascular Schiller–Duval bodies (Figure 1B). The teratoma was composed of well-differentiated cartilage and cystic formations surrounded with dense connective tissue stroma (Figure 1C). The rhabdomyosarcomatous component from a separate nodule showed sheets of atypical small cells with pleomorphic hyperchromatic nuclei and elongated cells with abundant eosinophilic cytoplasm (Figure 1D and E). The mitotic count was high (7/10 HPF). Immunohistochemically these cells strongly expressed desmin (Figure 1F), myogenin (Figure 1G) and myoglobin (Figure 1H). The adjacent testicular parenchyma contained foci of intratubular germ cell neoplasia of an unclassified type. Necrosis was observed in less than 10% of the tumor. No signs of vascular invasion and no spread to the rete testis, epididymis or beyond the tunica albuginea were found. Follow-up at 6 months after surgery did not show any recurrence or metastasis. The patient did not receive any additional therapy.

In the study by Bray *et al.* [1], the incidence of testicular cancer has shown a consistent increase in the European countries, while at the same time there was a decline in testicular cancer mortality. Advances in the treatment of testicular cancer caused large decreases in

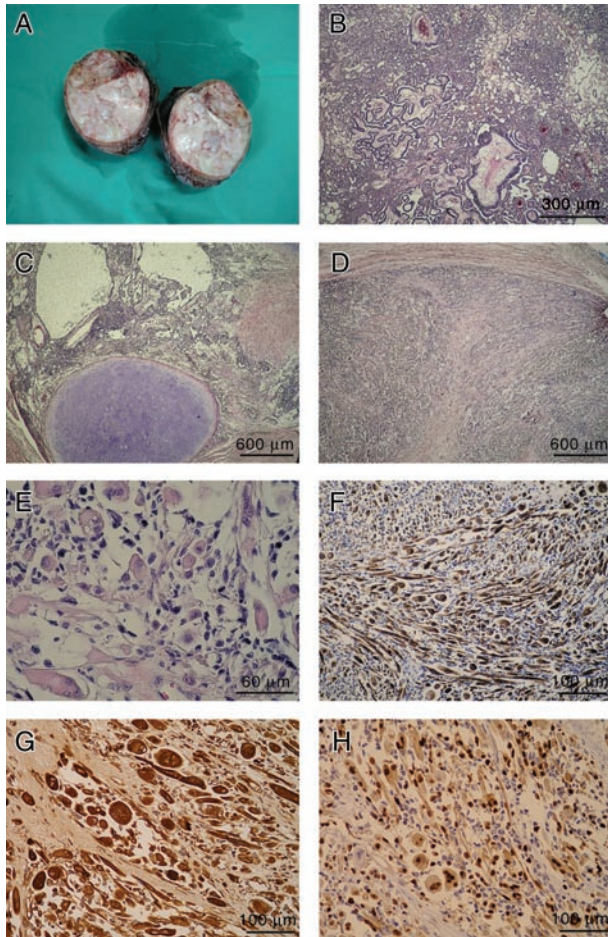


Figure 1. Grossly, the tumor was well circumscribed, showing a soft and yellow cut surface, with areas of cartilaginous tissue and with only a slim margin of residual testicular tissue. Away from the main mass there was an additional well-circumscribed nodule (A). Microscopically, the tumor was composed of a yolk sac component (B, 100 × HE), mature teratoma (C, 40 × HE), and rhabdomyosarcoma (D, 40 × HE and E, 400 ×). Immunohistochemically, the rhabdomyoblasts showed a positive reaction for desmin (F, × 200), myogenin (G, × 200) and myoglobin (H, × 200).

mortality in some European countries, despite increases in incidence [1].

Testicular MGCTs represent 32%–54% of all germ cell tumors [2, 3]. They usually occur at the mean age of 30 years. Clinical presentation includes painless or painful enlargement of the testis. Serum levels of AFP and beta-hCG are often elevated [2].

MGCTs consist of more than one histological com-

ponent that may occur in any combination. Testicular germ cell tumors are omnipotent, can proliferate into homogeneous seminomas and are able to differentiate into any type of tissue, both in the embryo and outside, and form seminomas or nonseminomas (teratomas). The precursor lesion or carcinoma in situ cells show phenotypic similarity to primordial germ cells or gonocytes, which suggests that the cells were stopped at an early stage of differentiation [4].

The most common combination is teratoma and embryonal carcinoma [2]. A case of rhabdomyosarcoma in a mature teratoma and a case of rhabdomyosarcoma in a mediastinal teratoma have been reported [3, 5]. Nongerminous malignant tumors of somatic type malignancy may arise in primary or metastatic germ cell tumors and are most likely derived from teratomas. They are seen in 3%–6% of patients with metastatic MGCTs, suggesting a poor prognosis [2].

MGCT of the testis in combination with the somatic type rhabdomyosarcoma that occurred in our patient is quite uncommon. Recognition of this variant is important because it may mimic a somatic sarcoma if inadequately sampled, and the clinical outcome may differ from the typical testicular MGCT. Therefore, correct histological analysis of testicular MGCTs and their metastases are essential parts of the diagnosis that will guide the correct therapeutic approach and give useful information on the prognosis.

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