Case Report

Diagnostic fine needle aspiration cytology of a malignant testicular Sertoli cell tumor with cutaneous metastasis in an adult

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ABSTRACT

Sertoli cell tumors (SCTs) of the testis are sex cord stromal tumors. These are very rare and usually benign. Malignant behavior is observed in 10% of such tumors. The occurrence of metastasis in such cases is extremely rare, with few cases reported in the literature till now. We present an unusual case of cutaneous metastasis of a malignant SCT in a 44-year-old male, diagnosed on fine needle aspiration cytology of a scrotal nodule, 6 months after radical orchidectomy for the primary tumor. The cytopathological findings of the scrotal nodule were correlated with the histopathology of the primary tumor and complemented with an immunocytochemical study that showed cytokeratin and vimentin positivity. Thus, cytopathological features along with immunocytochemical study provide an accurate diagnosis of the rare entity, when seen at metastatic sites also.

Key words: Malignant, Metastasis, Sertoli cell, Tumor

Sertoli cell tumors (SCT) comprise between 0.4% and 1.5% of all testicular neoplasms [1]. The majority of SCTs are benign, whereas approximately 10% are malignant, based on the accepted criteria of malignancy, the demonstration of metastasis [2]. Malignant SCT is composed of pleomorphic and anaplastic cells and tends to invade locally and metastasize [3,4].

We report a case of malignant SCT diagnosed on fine needle aspiration cytology (FNAC), in an adult with metastasis on the scrotal skin postoperatively after 6 months of radical orchidectomy for the primary tumor, denoting its malignant potential, which is an extremely rare event.

CASE PRESENTATION

A 44-year-old male came for follow-up for his left testicular tumor, for which he had undergone surgery 6 months back, and now presented with a scrotal nodule on the left side, of two months duration. The patient had no other complaints.

On clinical examination, a nodule of 2.0 × 1.5 cm in size was present on the left scrotal skin, 2 cm away from the surgical scar. The scar was due to the orchidectomy performed for a testicular swelling, which the patient had for 11 years. Serum follicle-stimulating hormone, luteinizing hormone, prolactin, testosterone, β-human chorionic gonadotropin, and estradiol levels were normal.

According to the previous records and patient's clinical history, it was understood that the testicular mass was slowly growing and painless. The tumor was then excised and submitted to our tertiary care hospital. The requisite information was collected further from previous hospital records.

Grossly, the specimen measured 5 × 5 × 3 cm. The cut section showed a tumor of 4.8 × 2 cm that was gray-white, nodular, firm, with a few hemorrhagic and cystic areas. No normal testicular tissue was found at the periphery (Fig. 1).

Microscopically, hematoxylin and eosin-stained sections revealed moderately pleomorphic cells arranged in cords, solid sheets and a tubular pattern. The cells had a round to oval vesicular nucleus with a small nucleolus and a moderate amount of eosinophilic to vacuolated cytoplasm. The cells in the tubules resembled normal Sertoli cells. A few mitotic figures were also evident (Fig. 2a). There was no invasion of the tunica albuginea or epididymis. It was reported as an SCT – not otherwise classified (NOS) (pT1, N0, M1a) with close follow-up of the patient due to the large size of the tumor, moderate pleomorphism, and the presence of a few mitotic figures, which were poor prognostic indicators.

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On follow-up visit after around 6 months, a firm nodule on the scrotal skin of the patient was noted. FNAC of that scrotal nodule was done with a 22-G needle. The smears were stained with May Grunwald Giemsa stain. The smears were cellular, revealing tissue fragments, sheets, and dispersed tumor cells against a background of necrotic material and inflammatory cells. The tumor cells resembled Sertoli cells and showed moderate pleomorphism. They were round to oval, with a moderate amount of pale vacuolated cytoplasm, a central to eccentric nucleus with finely granular chromatin. A few atypical mitotic figures were also present (Fig. 3b and 3c). The cytomorphological features closely resembled those seen in the primary testicular tumor, together with immunocytochemical positivity for cytokeratin and vimentin, supported the diagnosis of metastatic malignant SCT.

The nodule was resected. The patient was treated with post-operative chemotherapy and was kept on close follow-up with 3 monthly serum tumor markers. He continued treatment and follow-up for 3 months, but was clinically deteriorating and progress could not be tracked after that; he did not further show up.

DISCUSSION

SCTs are rare neoplasms and account for 17% of non-germ cell tumors [1]. Approximately 10% are associated with metastasis, exhibiting considerable malignant potential [3,4]. Malignant SCT with cutaneous metastasis is an unusual presentation, and only one case has been reported in the literature so far [5].

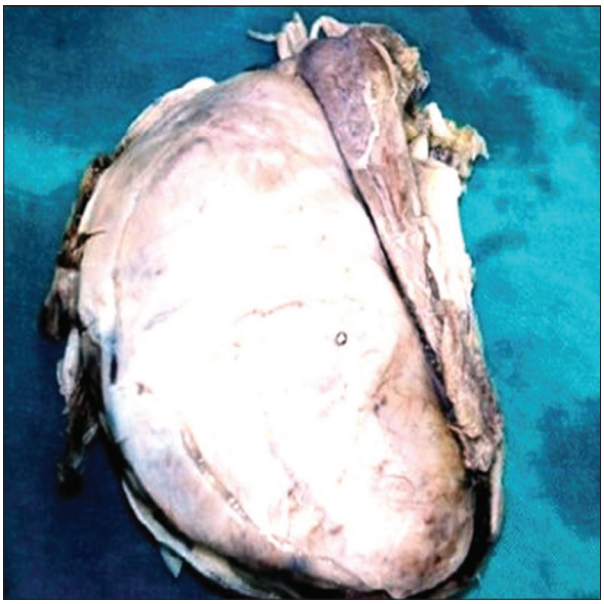

Figure 1: Cut section showed a tumor of 4.8 cm × 2 cm that was gray-white, nodular, firm, with few hemorrhagic and cystic areas

SCTs arise from specialized stromal cells that form the supporting network of the spermatogenic cells of the testis. The peak incidence is in the 30s and 40s [6]. The most common clinical feature is a slow-growing, painless testicular mass. About one-third of SCTs are associated with gynecomastia due to estrogen production [7]. In the present case, the patient was a 44-year-old male and had had a painless testicular mass for a long time before orchidectomy without any hormonal imbalance or gynecomastia.

The macroscopic appearance of malignant SCT is larger, gray-white to creamy yellow, firm, and may contain cystic cavities. They differ from benign growths in the following ways: Benign growths are usually well-demarcated from the residual testicular tissue, whereas malignant growths are either poorly demarcated with no residual testicular or para-testicular tissue.

Microscopically, the appearance is variable, but the unifying feature is the presence within the tumor of tubules with or without a lumen lined by radially arranged cells that resemble normal Sertoli cells. SCTs are classified into three histological subtypes: classic or "not otherwise specified" variety, sclerosing SCT (SSCT), and large cell calcifying SCT (LCCSCT). SSCTs are characterized by a prominent collagenous background. LCCSCTs are characterized by large tumor cells, abundant eosinophilic cytoplasm, tubular and trabecular differentiation and extensive calcified debris [8]. Immunohistochemical staining adds some differential diagnostic information from other testicular tumors. SCTs are usually positive for cytokeratin and vimentin but weakly positive for S-100 [6]. In our case, radiologically, an ill-defined hypoechoic lesion was seen with an enlarged inguinal lymph node measuring approximately 12 mm. Grossly, the tumor was nodular, firm, gray-white with few hemorrhagic and cystic areas. It was diagnosed as an SCT NOS (pT1, N0, M1a) histopathologically. There were no calcified areas or prominent collagenous background. A large tumor size (>5 cm), irregular margin, invasion to adjacent tissue, lymphatic or vascular invasion, and mitotic figures (>5 mitotic figures/10 high-power fields) usually indicate a malignant SCT, but the presence of metastasis is the best malignancy indicator [9,10]. The most common sites of metastasis are the iliac and para-aortic lymph nodes.

Metastatic SCTs have a poor prognosis [8]. In our case, the prognosis of the patient was poor because of

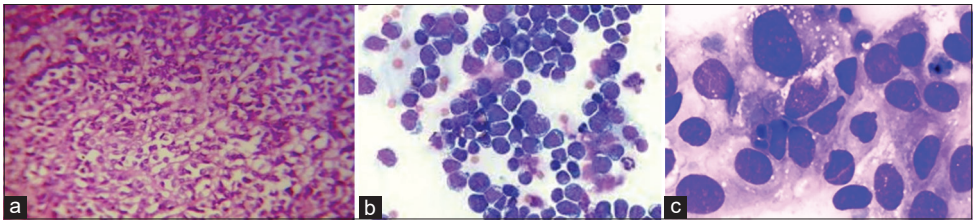

Figure 2: (a) Hematoxylin and eosin-stained sections, (b&c) May Grunwald Giemsa staining of the smear after 6 months

large size, irregular margin, moderate pleomorphism, mitotic figures and most importantly, metastasis on the scrotal skin as a small nodule after 6 months of surgery. The diagnosis of malignant SCT was established on FNAC along with an immunocytochemical study.

CONCLUSION

Thus, SCT is a rarely encountered primary testicular tumor that carries a poor prognosis if it presents with a malignant subtype. FNAC acts as an important non-invasive tool in establishing an accurate diagnosis of this rare entity, even at metastatic sites when supplemented with immunocytochemistry

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