Pure Transitional Cell Carcinoma of the Ovary: A Recently Recognized Rare Subtype of Ovarian Epithelial Cancer

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Abstract

Transitional cell carcinoma (TCC) of the ovary is a nomenclature given by Austin and Norris to a group of malignant Brenner tumors having a benign component. It is to be noted that transitional cells tumors of the ovary are not equivalent to Brenner tumor. Microscopically, Brenner tumors consist of solid and cystic nests of epithelial cells resembling transitional epithelium (urothelium), and not transitional cell epithelium in actual, surrounded by an abundant stromal component of dense, fibroblastic nature. Most authors currently favor for Brenner tumor, an origin from surface ovarian epithelium or the cysts derived from them, through a process of metaplasia. This subtype of ovarian tumor has a favorable response to chemotherapy than other ovarian surface epithelial cancers; therefore, it warrants early recognition. We hereby present a rare case report of isolated TCC of ovary.

Keywords: *Ovary, transitional cell, urothelium*

Introduction

Among all the malignancies of the female genital tract, ovarian carcinoma is the most common fatal tumor. Ovarian carcinoma encompasses a variety of histologic patterns, including serous, endometrioid, clear cell, undifferentiated, and unclassified types.[1] Transitional cell carcinoma (TCC) of the ovary is a newly diagnosed entity of ovarian carcinoma. It was initially defined by Austin and Norris in 1987.[2] It resembles urothelium rather than ovarian surface epithelium.[3] It is defined as a primary ovarian carcinoma in which urothelial features are present, but no Brenner tumor (benign, metaplastic, or proliferating) can be identified.[4] TCC of the ovary lacks the prominent stromal calcification. It arises directly from the pluripotent surface epithelium of the ovary and from cells with urothelial potential, rather than from a benign Brenner tumor precursor.[5] This subtype of ovarian tumor has a favorable response to chemotherapy than other ovarian surface epithelial cancers; therefore, it warrants early recognition.[6]

Case Report

A 50-year-old already tubectomized female (P3 L2G0) came to the gynecology outpatient department with complaints of abdominal distension, pain, and weight loss of 4-month duration. Per abdomen examination showed a mass in the right iliac region measuring 9 cm × 7 cm × 5 cm. On per-vaginal examination, she had a right adnexal mass which was mobile and nontender. Ultrasonography findings revealed a well-defined solid and cystic lesion arising from the right adnexa. Computed tomography scan of the abdomen showed a heterogeneous solid to cystic lesion on the right side of pelvis measuring 8 cm × 7 cm × 6 cm. Other abdominal and pelvic organs were normal and no lymphadenopathy was observed. All laboratory investigations were within normal limits except for CA-125 which was slightly raised. The patient underwent abdominal hysterectomy, and uterus, cervix, right fallopian tube, and right ovary/ovarian mass were removed and sent for histopathological examination. Gross examination of the ovarian mass revealed a globular structure with lobulated outer surface. Cut section showed multiple solid and cystic spaces [Figures 1a and b]. Microscopic examination of the tumor revealed malignant tumor cells arranged in solid sheets and nests separated by fibrous stroma. Tumor cells are also forming papillary structures which are lined by urothelial-like cells resembling malignant

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TCC. Individual tumor cells are highly pleomorphic and hyperchromatic and show granular/vacuolated cytoplasm. Tumor is also showing high mitotic index [Figures 2a and b]. Immunohistochemistry (IHC) studies done showed cytokeratin (CK) 7 positive [Figure 3a], Wilms' tumor protein-1 (WT1) positive [Figure 3b], and CK 20 negative [Figure 3b inset]. Depending on microscopic and IHC features, a diagnosis of TCC of ovary was made.

Discussion

The true incidence of TCC of the ovary remains unknown. Transitional cell tumors, including TCC, and benign and malignant Brenner tumors of the ovary represent ~2% of all ovarian tumors. Moreover, according to the World Health Organization, depending on the histological pattern, these tumors are classified as benign, borderline, or malignant Brenner tumors and TCC.[6] In a study done by Silva *et al*., focal and diffuse TCC of the ovary pattern was seen in only 9.4% (88 of 934) cases of ovarian cancers. They reported that the estimated overall 5-year survival rate after surgery was 37%, and for patients who received chemotherapy, it was 41%.[1] To simplify things, Brenner with papillary fronds plus high-grade nuclear atypia and stromal invasion is known as malignant Brenner, and this entity having foci of benign component is called TCC. Microscopically, features of this cancer are punched out' microspaces, large cystic spaces, and large blunt papillae.[7] In our case, Figures 1b and 2a show the blunt nature of papillae alongside the cystic spaces. Some authors have found no immunohistochemical similarities between bladder urothelial tumors and either Brenner tumors or ovarian TCC. Others have found an analogy by way of uroplakins and CK 20, but surprisingly only in Brenner tumor and not in ovarian TCC.[6,8] The IHC panel shows positivity for CK 7 and WT1, but negative for CK 20, suggesting an pure TCC of ovary and not metastasis from urothelial carcinoma.

Conclusion

Pure TCC of the ovary is a rare subtype of epithelial ovarian cancer. Treatment consists of surgical resection followed by adjuvant chemotherapy in some cases. These tumors are said to be sensitive to some chemotherapeutic combinations, and the prognosis is better than some other types of ovarian cancers. Hence, early detection and full surgical as well as chemotherapeutic treatment is the key which helps in good prognosis of these tumors.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

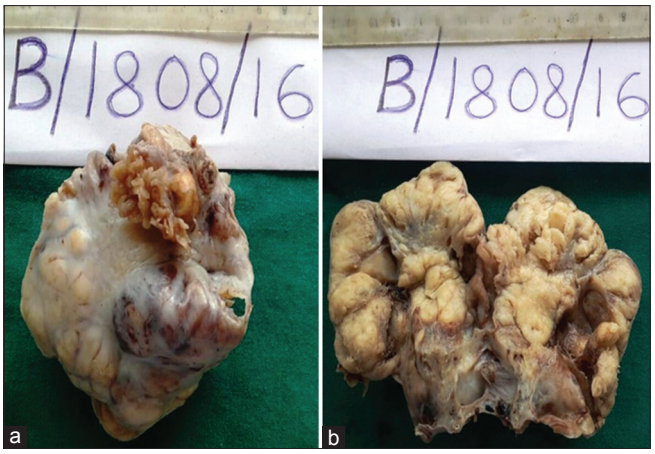

Figure 1: (a and b) Gross picture of the ovarian mass revealed a globular structure with lobulated outer surface. Cut section showed multiple solid and cystic spaces

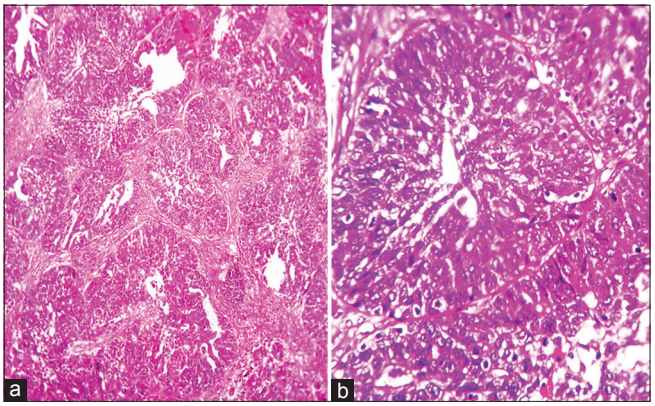

Figure 2: (a) Individual tumor cells having highly pleomorphic, hyperchromatic, and granular/vacuolated cytoplasm (H and E, ×20) (b) High mitotic index of the tumor (H and E, ×40)

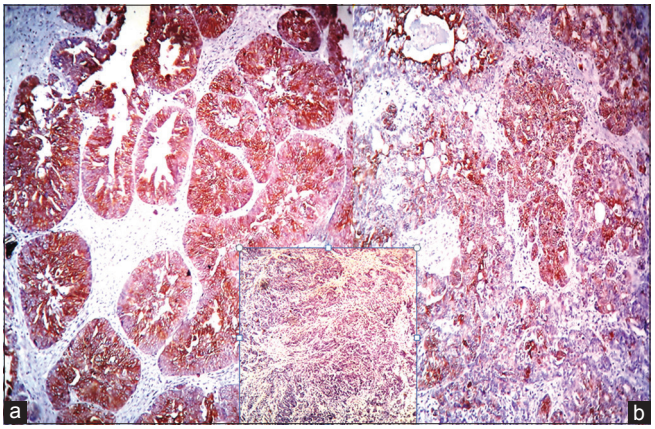

Figure 3: (a) Cytokeratin 7 positivity (b) Wilms' tumor protein-1 positivity. Inset showing cytokeratin 20 negativity

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Conflicts of interest

There are no conflicts of interest.

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