ABSTRACT

Transitional cell carcinoma (TCC) of the ovary is a recently recognized, subtype of ovarian surface epithelial cancer; the pure form accounting for only 1% of surface epithelial tumors. It has been described as a primary ovarian carcinoma with definite urothelial features but no benign, metaplastic and/or proliferating Brenner tumor (BT) identified. Recognition of such tumours is important because of its rarity, favorable response to chemotherapy and an improved patient survival. A case series of primary TCC of the ovary (3 cases) with brief review of literature is being presented.

CASE SUMMARY

A series of 3 cases of Transitional cell carcinoma of the ovary are presented here. Case details are summarized in [Table/Fig-1].

DISCUSSION

TCC of the ovary is a rare subtype of ovarian surface epithelial cancer classified under transitional cell tumors along with benign, borderline and malignant Brenner tumor [1]. It was first defined by Austin and Norris in 1987. They reported a group of patients who had ovarian tumors presenting with histologic features similar to those seen in a malignant Brenner tumor, but the tumors lacked associated benign Brenner tumor component and thus was distinguished from malignant Brenner tumor. In addition, TCC lacks the prominent stromal calcification. Because TCC of the ovary has close morphologic similarities to TCC of the bladder and it behaves more aggressively than malignant Brenner tumor, Austin and Norris concluded that ovarian TCC arises directly from the pluripotential surface epithelium of the ovary and from cells with urothelial potential, rather than from a benign or proliferative Brenner tumor precursor. The clinical presentation is indistinguishable from other types of ovarian carcinoma [2].

TCC of the ovary has been described as a primary high grade carcinoma in which definite urothelial features are present but no benign, metaplastic and/or proliferating Brenner tumor can be identified. The pure form of TCC accounts for only 1% of surface epithelial tumours, mixed carcinomas with a minor TCC component comprise 3% and those with a predominant TCC component make up 5% [3]. These tumors have a immunohistochemical profile that is different from ovarian Brenner tumors and TCC involving the urinary tract. It has been proposed that ovarian TCC may represent a high grade serous carcinoma with morphologic features of transitional cell differentiation rather than being a distinct tumor type [4]. Recognition of such tumors is important because of a favorable response to chemotherapy and an improved patient survival [3,5].

Eichhorn and Young found a variety of histologic features that, in aggregate, produced a distinctive appearance. The patterns included, in order of frequency; undulating, diffuse, insular, and trabecular. Punctured out microspaces, large cystic spaces, and large, blunt papillae were also common. The tumors tend to be relatively monomorphic with typically pale and granular cytoplasm, although occasionally it is clear or oxyphiloc. The round to oblong nuclei have a large, single nucleolus or a longitudinal groove. Although nonspecific, slit-like fenestrations and bizarre tumor giant cells, two features of high-grade serous carcinoma, are frequently seen in TCC of the ovary [6]. In present study [Table/Fig-2a, 2b], all three cases showed presence of papillae [Table/Fig-2c] and tumor giant cells [Table/Fig-2d]. Squamous metaplasia was observed in a single case (case 1).

The histogenesis of Brenner tumor is thought to be from multipotential cecal epithelial cells, either at the surface of the ovary or from epithelial inclusion cysts, which can differentiate into several mullerian forms. It has also been suggested that Walnord nests are precursor lesions for Brenner tumors but this is a problematic theory as most Walnord nests are found in extravarrionic tissue and the cells rarely express uroplakins. There are little data relevant to the histogenesis of TCC, but it is suggested to be a variant of high-grade serous carcinoma [4].

The immunoprofile of TCCs is similar to that of other surface epithelial carcinomas. Both Brenner tumor and ovarian TCC express CK7 but lack expression of CK 20 unlike urinary tract urothelial neoplasms. Most ovarian TCCs are immunoreactive for Wilms tumor protein (WT1) and, in contrast to Brenner tumors and extravarrionic urothelial tumors, they typically lack reactivity for uroplakin III and thrombomodulin. p63, another urothelial differentiation marker, has been demonstrated in benign and borderline Brenner tumors but not in ovarian TCC [4,6-9]. Unlike bladder TCCs, ovarian TCCs are often positive for vimentin, CA-125 and WT [1]. Croft et al., concluded that almost all of the ovarian TCCs marked strongly for estrogen receptors (ERs), a characteristic that may help to differentiate these lesions from papillary urothelial carcinoma metastatic to the ovary [10]. In present study, immunohistochemistry for ER showed weak nuclear positivity in all three cases [Table/Fig-2e,f,g].

With optimal surgical resectability and standardized chemotherapy TCCs have a significantly better prognosis as compared to all other types of ovarian carcinomas. A propensity for micronodular rather than macronodular extraovarian spread and better surgical resectability due to lesser degree of diffuse infiltrative growth of TCC might contribute to the survival benefit [11]. Hence, prognosis of patients with TCC is considerably better than those with the more common serous carcinoma, even in advanced stage [5].

DIFFERENTIAL DIAGNOSIS

Primary TCC can be closely mimicked by metastatic disease [12]. The usual clinical, gross, and microscopic criteria for differentiating primary from secondary ovarian tumors are helpful in this differential diagnosis; immunohistochemical staining may also be of assistance. Urinary tract tumors of this type have been shown to be reactive for CK20 and thrombomodulin, in contrast to primary ovarian TCC [7-9].

A more common problem is distinguishing moderate to high-grade TCCs from other poorly differentiated surface epithelial carcinomas, particularly poorly differentiated serous carcinomas and undifferentiated carcinomas. Such tumors have a greater tendency to grow in diffuse masses; when they have a pattern simulating that of papillary TCCs, it is much more often caused by
the presence of pseudopapillae resulting from necrosis with dropout of necrotic cellular debris. TCCs have broad papillae lined by cells, some of which are recognizable as transitional cells; similar cells form undulating, thick bands. Scattered microspaces, which are often numerous, also favor a diagnosis of TCC [6].

CONCLUSION
TCC of the ovary is a rare and relatively recently established entity. The pure form of TCC accounts for only 1% of surface epithelial tumours. Though currently classified under transitional cell tumors [1], the exact histogenesis of the tumor is unclear. In addition to routine histopathological features, markers like WT-1 and ER are helpful in establishing a diagnosis. The recognition of this tumor holds significance due to its biologic behavior. Patients with TCC have considerably better outcome with optimal resection and standardized chemotherapy as compared to other ovarian neoplasms particularly serious adenocarcinoma.

REFERENCES