CASE REPORT

An Incidental Finding of Ovarian Brenner Tumor

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ABSTRACT:
Brenner tumors of ovary are relatively uncommon neoplasms and constitute about 1.4-2.5% of all tumors of ovary. Most of these tumors present as an incidental finding either on gross examination of ovary or as a microscopic finding. They are classified in surface epithelial tumors of ovary. We report here a case of a 50 year old woman who presented to the gynecology and obstetrics department of Jinnah Post Graduate Medical Center, Karachi, Pakistan. The presenting complaints were irregular and heavy per vaginal bleeding for a few months. Total abdominal hysterectomy and bilateral salpingo-oophorectomy was performed and the specimen was received at the department of Pathology, Basic Medical Sciences Institute (BMSI), JPMC, Karachi. The microscopic examination of left ovary revealed benign Brenner tumor composed of well demarcated nests of uniform transitional cells.

Keywords: Ovarian neoplasm, Brenner tumor, Transitional cell tumor, Incidental finding

INTRODUCTION:

Brenner tumors are uncommon ovarian neoplasms and constitute about 1.4-2.5% of all tumors of ovary.[1] The average age of presentation is 50 years with 70% of these are diagnosed in over 40 years of age group.[2] Most of them are incidentally found.[3] They are classified in the surface epithelial tumors of ovary.[4,5] It is hypothesized that transitional epithelia of these tumors arise from metaplasia of ovarian surface epithelium. Majority of the neoplasms are benign however they can also present with borderline or malignant morphology and clinical course.

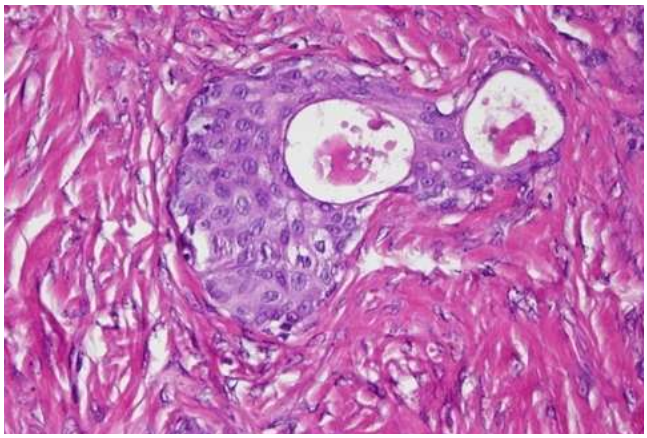
CASE REPORT:

A 50 year old woman presented to the Gynecology and Obstetrics outpatient department, Jinnah Post Graduate Medical Center, Karachi with the presenting complaints of irregular and heavy bleeding for a few months. Clinically adenomyosis was suspected. Hystrectomy and bilateral Salpingo-oophorectomy was performed and the specimen was sent to the department of Pathology, Basic Medical Sciences Institute (BMSI), Jinnah Post Graduate Medical Center, Karachi.

On gross examination the cut surface of uterus showed an uncircumscribed gray white area in the myometrium measuring 6x5x3cm. Left ovary was slightly larger than the right measuring 3.2x1.0x0.6 cm. Cut surface of both ovaries were unremarkable. No firm circumscribed gray white or cystic areas were seen in the left ovary.

Microscopically the left ovary revealed multiple well demarcated solid nests of uniform transitional cells exhibiting oval nuclei, prominent cell borders, eosinophilic cytoplasm and occasional small basophilic nucleoli. Some nuclei had longitudinal grooves exhibiting coffee bean appearance. The tumor nests were surrounded by dense fibrous stroma (Figure 1).

Figure: 1



H&E 40x. Nest of uniform transitional cells exhibiting oval nuclei, prominent cell borders & eosinophilic cytoplasm. Some nuclei have longitudinal grooves exhibiting coffee bean appearance

No papillary projections or cellular atypia was identified. Microscopically the tumor size was 1.2x1.1 cm. The right ovary and both fallopian tubes were histologically unremarkable. The whitish area of myometrium showed multiple foci of adenomyosis.

Immunohistochemical stains were performed and

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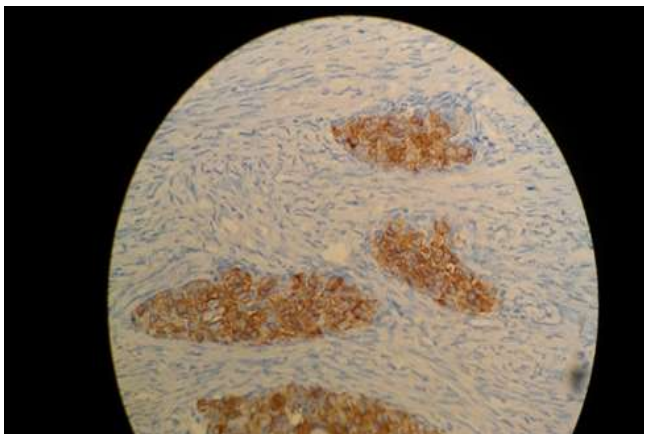
Cytokeratin 7 and cytokeratin 20 were applied. Cytokeratin 7 revealed diffuse and strong positivity (Figure2) while cytokeratin 20 was negative.

Figure: 2



40x. Immune marker cytokeratin 7 showing diffuse and strong positivity in Brenner cell element

DISCUSSION:

Benner tumors of ovary were first explained in 1907 by Fritz Brenner.[1] Majority of Brenner tumors are incidentally found either during surgery or pathological examination, where the ovaries are excised for other reasons. Most of the Brenner tumors are benign, however borderline and malignant forms although rare, have been reported.[2,3]

Various theories exist regarding the origin of Brenner tumor. Some suggest that it arises either from heterotopic wolffian epithelium, or from multipotential ovarian coelomic epithelial cells. Other studies propose their origin from urothelium or transitional metaplasia of epithelial inclusion cyst. Theories suggesting Walthard cell nests as the precursor of Brenner tumor are also present. The most widely accepted theory regarding the origin of Brenner tumor is that they are derived from the multipotential coelomic epithelium of the ovary which undergoes transitional metaplasia. The coelomic epithelial cells can be found either on surface or on epithelial inclusion cysts.[4,5]

Most Brenner tumors are asymptomatic however some of them can produce symptoms of abnormal vaginal bleeding, pelvic pain and a palpable pelvic mass. In our case the patient presented with complaints of heavy and irregular vaginal bleeding since few months but it was due to concomitant adenomyosis.

Macroscopically benign tumors are well circumscribed tumors with a gray white or slightly yellow cut surface.Most of the Brenner tumors are small in size usually measure less than 4.5cm The largest benign Brenner tumor in literature, however has been reported to be 39 cm. Borderline tumors are usually cystic with either unilocular or multilocular presentation. Malignant tumors may be cystic or solid.[6,7,8,9,10] In the present case the effected left ovary was slightly larger in size than the left , however the cut surface was unremarkable. No solid or cystic areas were identified. Imaging techniques like ultrasonography, CT and MRI are usually non-specific to diagnose Brenner tumor. Benign tumors composed uniformly of solid component in imaging studies are mostly similar to fibroma, thecoma or leiomyoma.[11,12] In the present case no information was provided regarding the imaging diagnostics of the patient. Microscopically Benign Brenner tumors are composed of sharply demarcated small nests of transitional cells within fibromatous stroma. The cells are uniform in size with promin-ent cell borders and eosinophilic cytoplasm. The nuclei are oval and some have longitudinal grooves. Calcifications are commonly seen in the stroma. Borderline Brenner tumors show complexity of architecture in the form of papillary projections within the dilated cystic spaces. Cytologic atypia is moderate comprising of atypical nuclei with dense chromatin, prominent nucleoli and conspicuous mitotic figures. Stromal invasion is not seen. Malignant Brenner tumor display invasion into the stroma.In comparison to benign tumors, stroma in malignant Brenner tumors is sparse.[2,8,9] In the present case the tumor displayed the typical morphology of benign Brenner tumor. The left ovary revealed multiple well demarcated solid nests of uniform transitional cells surrounded by dense fibrous stroma. Some nuclei showed longitudinal grooves. No papillary projections or cellular atypia was noted. The right ovary and both fallopian tubes were unremarkable.

Most immunohistochemical studies show cytokeratin7 positivity and cytokeratin 20 negativity in Brenner tumor be it benign, borderline or malignant. Other studies reveal uroplakin III positivity in benign Brenner tumor which also shows positive immune reaction in Walthard cell nests sugges-ting a link between the origin of Brenner tumor and Walthard cell nests. [1,9]

In the present case we used cytokeratin 7 and cytokeratin 20 immune markers. The cytokeratin 7 showed strong and diffuse positivity in tumor cell nests while cytokeratin 20 was negative.

Treatment of choice for benign Brenner tumor is unilateral oophorectomy. Complete surgical resection is the cure in majority of the cases of benign Brenner tumor since they are well circumscribed and easy to locate. Benign Brenner tumor presents with good prognosis. Borderline Brenner tumors also have favorable prognosis and thus they may also be treated by complete surgical resection. However malignant tumors may affect the surrounding tissue and they may also metastasize into nearby structures, their treatment may require further intervention in addition to complete surgical resection.[2,4,8]

In some cases hystrectomy specimens received along with oophorectomy specimens demonstrated other gynecologic pathologies including leiomyoma; adenomyosis, adenomatous endometrial polyp and Walthard cell rest.[1] In the present case foci of adenomyosis were present.Brenner tumors have also been rarely reported in association with pregnancy. [4] Review of literature also reveals 7 reported cases of Brenner tumor and Struma ovarii coexisting in the same ovarian neoplasm.[6]

CONCLUSION:

In the present case benign Brenner tumor of left ovary was an incidental finding. The tumor nests revealed strong and diffuse positivity with immune marker cytokeratin. A diligent gross and microscopic examination is required so as not to miss the diagnosis. Surgical treatment has been found to be curative in benign Brenner tumors.

REFERENCES:

1. Kondi-Pafiti A, Kairi-Vassilatou E, Iavazzo C, Vouza E, Mavrigiannaki P, Kleanthis C et al. Clinicopathological features and immunoprofile of 30 cases of Brenner ovarian tumors. Arch Gynecol & Obstet 2012; 285:1699-702
2. Borah T, Mahanta RK, Bora BD, Saikia S. Brenner tumor of ovary: An incidental finding. J Midlife Health. 2011; 2(1): 40-1
3. Vukmirovic F, Vukmirovic IT, Vukmirovic M. Clinicopathological features of ovarian Brenner tumors in Montenegro. Cent Eur J Med. 2013; 8(2):146-8
4. Gedikbasi A, Ulker V, Aydin O, Akyol A, Numanoglu C, Ceylan Y. Brenner tumor in pregnancy: Clinical approach and pathological findings. J Obstet Gynaecol Res 2008; 35:565-8
5. Roma AA, Masand RP. Ovarian Brenner tumors and Walthard nests: a histologic and immunohistochemical study. J human path.2014. doi:10.1016/j.humpath 2014. 08.003
6. Terada T, Tateoka K. Ovarian cystic tumor composed of Brenner tumor and struma ovarii. Int J Clin Exp Pathol 2012; 5(3): 274-7
7. Kurman RJ , Shih LM. The origin and pathogenesis of epithelial ovarian cancer- a proposed unifying theory. Am J Surg Pathol 2010; 34(3):433-43. doi:10.1097/PAS. 0b013e3181cf3d79
8. Ruggiero S, Ripetti V. Binachi A, Vaccara VL, Alloni R, Coppola R. A singular observation of a giant benign Brenner tumor of the ovary. Arch Gynecol Obstet 2011; 284(2): 513-6: doi:10.1007/s00404-011-1930-x. Epub 2011 May 19
9. Ali RH, Seidman JD, Luk M, Kalloger S, Gilks CB. Transitional cell carcinoma of the ovary is related to high-grade serous carcinoma and is distinct from malignant brenner tumor. Int J Gynecol Pathol 2012; 31(6):4 99-106
10. Zaidi S, Trimeche M, Hammedi F, Hidar S, Sriha B, Mestiri S. Bilateral proliferating Brenner tumor of the ovary associated with recurrent urothelial carcinoma of the urinary bladder. N Am J Med Sci 2010; 2(1): 39-41
11. Arnogiannaki N, Grigoriadis C, Zygouris D, Terzakis E, Sebastiadou M, Tserkezoglou A. Proliferative Brenner tumor of the ovary. Clinicopathological study of two cases and review of the literature. Eur J Gynaecol Oncol 2011; 32(5):576-8
12. Wang XY, Dai JR, Zhu Z, Zhao YF, Zhou CW. CT features of ovarian Brenner tumor and a report of 9 cases. Chinese Journal of Oncology. 2010; 35(2):359-62