

## Research Letter

## A borderline ovarian Brenner tumor mimicks uterine fibroids

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Brenner tumors are uncommon tumors that are a part of the surface epithelial–stromal tumor group of ovarian neoplasms. Most of these tumors are benign. However, they can be malignant. They are most frequently detected as incidental findings on pelvic examination or at laparotomy. Besides, they can occur in other locations very rarely, including the testes. We report on this rare, gynecological, borderline adnexal tumor because it mimicks the common, benign uterine fibroids we see in our daily practice.

A 47-year-old woman had a 3-year history of profuse menstrual bleeding. The gynecological ultrasound showed an enlarged uterus with a right-wall tumor mass measuring about 50 mm in size. We suggested conservative treatment and regular ultrasound follow-up. Unfortunately, the tumor was accompanied by several microcalcifications and grew to 80 mm within 6 months (Fig. 1), when surgical intervention was indicated. During the operation, the uterus appeared to be in normal size, but an enlarged right ovarian solid tumor, about 8 cm in size, was adhered to the uterus and the peritoneum. This solid tumor's surface was smooth, and the content was yellowish in color (Fig. 2). Unfortunately, the frozen section showed malignant cells of fibrous composition in the tumor, and the metastatic tumor was first impressed. Complete staging surgery, including a total hysterectomy, a bilateral salpingo-oophorectomy, an infracolic omentectomy; a pelvic and para-aortic lymph node sampling; and an appendectomy were done. The gross tumor (about 8 cm in size) was in the right ovary, with the outer surface lobulated, intact, and without adhesions. The sectioned surface of the main tumor contained 100% solid components that were yellow-white in color with a firm consistency. The contralateral ovary was mildly enlarged with focal, whitish nodule formation (18 mm). The other specimens were unremarkable. The microscopic findings indicated a right ovarian tumor exhibiting irregular epithelioid tumor nests infiltrating a dense

fibrous stroma, with focal mucinous metaplasia and calcification. Mild to moderate cellular atypia were present, but no definite stromal invasion was seen. Nuclear grooving of the tumor cells was occasionally found (Fig. 3). The tumor cells were diffusely positive for cytokeratin AE1/AE3 (pan cytokeratin is an antibody that recognizes keratin polypeptides) and negative for vimentin and SMA, supporting a Brenner tumor but not a granulosa cell tumor (Fig. 4). Finally, it proved to be a borderline Brenner tumor of the right ovary, without omental or retroperitoneal lymph node metastasis (0 of 26). The patient was discharged uneventfully on the seventh day after her operation. She is doing well and received regular follow-up in our department for about 8 months after the surgery, while this article was being prepared.

Epithelial ovarian tumors that resemble those of transitional cell neoplasms of the urinary tract are subclassified into Brenner tumors (benign, borderline, or malignant) and transitional cell carcinomas. Brenner tumors represent about 1.4–2.5% of ovarian tumors and are rarely malignant. It can occur in other locations very rarely, including the testes [1]. The clinical features include an average age at presentation of about 50 years and occasional signs of hyperestrinism, such as postmenopausal uterine bleeding, a slow rate of growth, and, rarely, ascites. The pathogenesis of these tumors begins with surface ovarian epithelium or cysts derived from them through a process of metaplasia is the most favor. On the whole, they always vary in size; are usually unilateral and firm; and closely resemble fibromas or thecomas, except for the frequent presence of small cystic areas filled with opaque, viscous, yellowish brown fluid. The histopathological differential diagnosis for Brenner tumor of the ovary included special staining and immunohistochemistry. The cytoplasm of Brenner tumor cells is immunoreactive for keratin, Epithelial membrane antigen (EMA), and Carcinoembryonic antigen (CEA). It may contain glycogen, mucin, and lipid in larger amounts in the stromal cells of hyperestrinism may contain larger amount of glycogen, mucin, and lipid. Argyrophilic cells are positive for chromogranin Serotonin or 5-Hydroxytryptamine (5-HT). Steroidogenic enzymes are usually absent.

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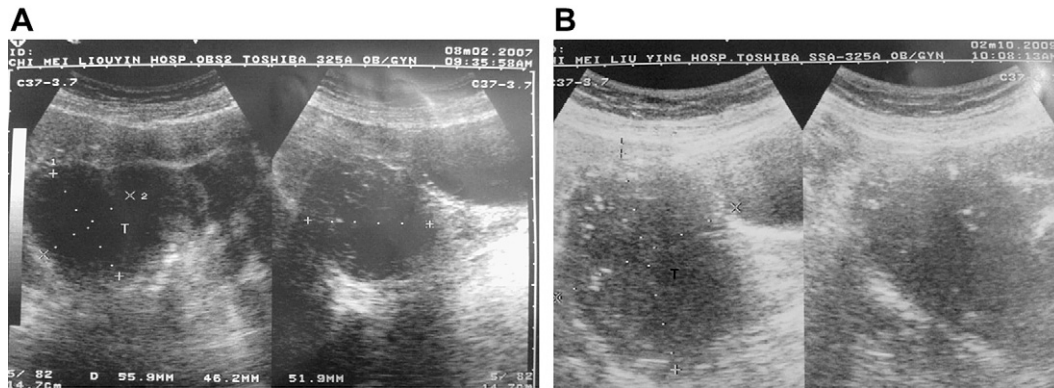


Fig. 1. The ultrasonographic images of the right ovarian, adnexal tumor (T) indicate that the tumor measures about 55 mm in size and seems to be a part of the right wall of the uterus. (B) Six months later, the tumor (T) had grown to 80 mm in size and was accompanied by some calcification spots.

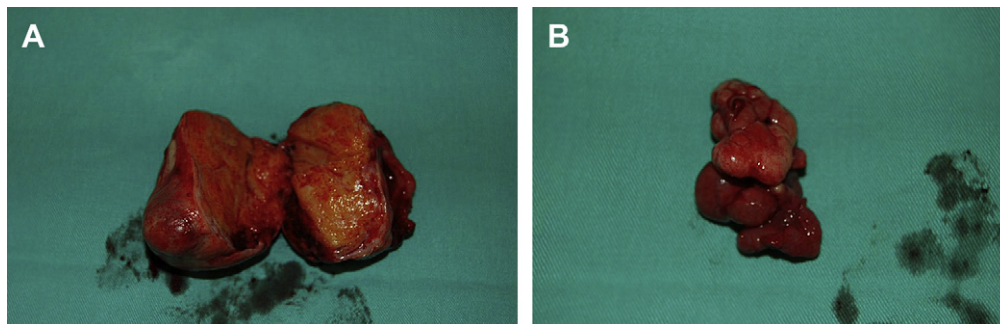


Fig. 2. (A) The gross tumor in the right ovary measured about 80 mm in size. The sectioned surface of the tumor contains 100% solid components that are yellow-white in color with a firm consistency. (B) The contralateral ovary: mildly enlarged with focal, whitish nodule formation (18 mm).

Although there are several reports of Brenner tumors showing estrogen activities, it is an extremely rare cause of excess androgen production, leading to virilism, and the source or mechanism of its androgen production is also unknown at present [2].

Extensive amorphous calcification in a solid mass or solid component in a multilocular cystic mass is a characteristic finding of an ovarian Brenner tumor by computed tomography and magnetic resonance imaging [3]. The benign component contained dense calcifications on computed

tomography and showed very low intensity on T2-weighted images, whereas the malignant component showed high intensity. The admixture of the two components may well reflect the pathological feature and may be a diagnostic clue to a malignant Brenner tumor [4].

The Brenner tumor of the ovary, including the typical, metaplastic, proliferating, and borderline, always had a good prognosis. They always follow a benign clinical course after simple oophorectomy. The vast majority of Brenner tumors are benign; therefore, early and accurate identification of

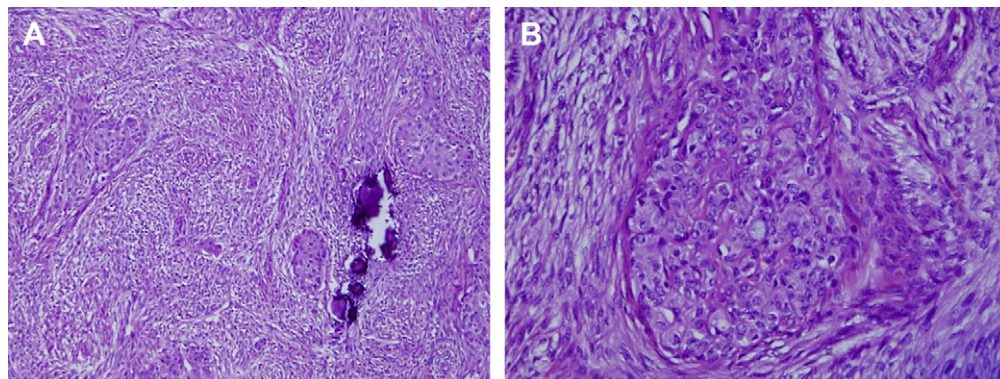


Fig. 3. (A) Some irregular epithelioid tumor nests infiltrating a dense fibrous stroma with focal mucinous metaplasia and calcification. (B) A close-up view of the epithelioid tumor nests, showing mild to moderate cellular atypia, but no definite stromal invasion is seen.



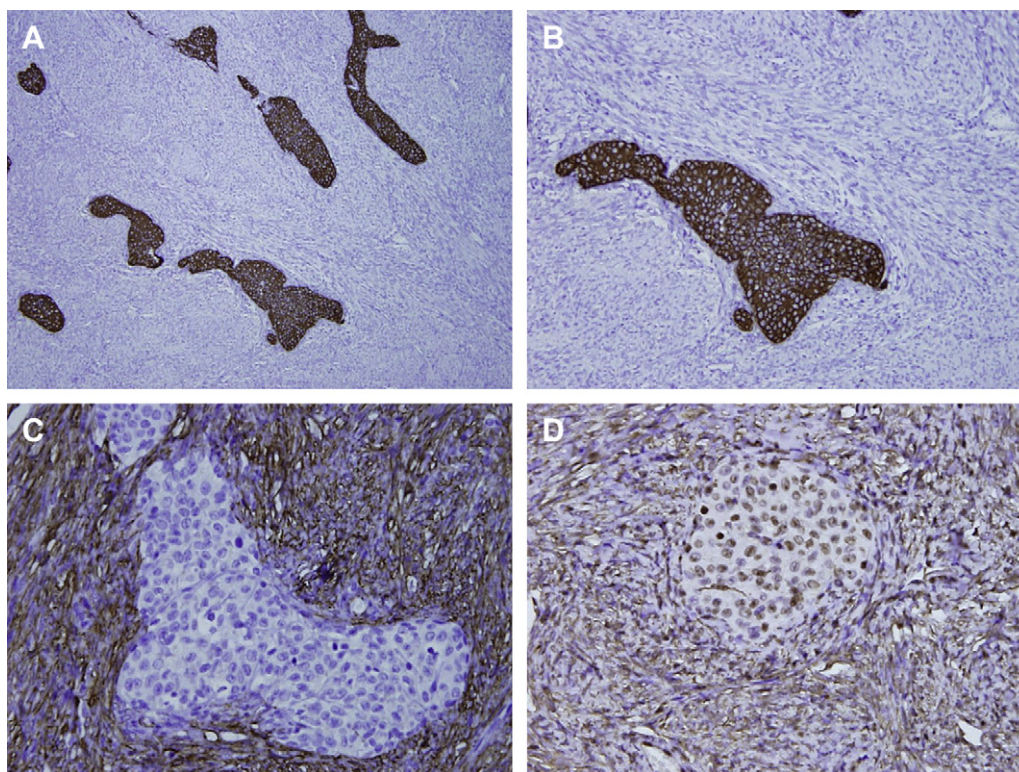


Fig. 4. (A, B) The tumor cells are diffusely positive for Pan-Cytokeratins and (C) negative for smooth muscle action and (D) vimentin, supportive of a diagnosis of a Brenner tumor but not a granulosa cell tumor.

a malignant tumor will ensure that the patient receives the precise surgical intervention required [5].

## References

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