Case Report

Borderline Ovarian Serous Adenofibromatous Tumor with Prominent Micropapillary Pattern

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ABSTRACT

Ovarian borderline serous tumors are uncommon. Combination of borderline serous adenofibromatous tumor and prominent micro papillary architecture is not previously reported. We report a case of borderline papillary serous adenofibromatous tumor (also called serous adenocarcinofibroma) with extensive micropapillary pattern in a 27 year-old married woman. She was infertile and presented with diffuse abdominal pain and dysparonia. Bilateral 5.3 and 4.5 cm solid ovarian masses were detected by sonography. Both masses were ovoid with tan-pink bosselated smooth external surfaces, and solid tan lobular cut surfaces. Microscopically, both tumors showed many papillary structures in a fibrotic stroma and contained multiple psammoma bodies. The papillae had broad hyalinized fibrotic stroma with many micropapillary projections arising from the main papilla, lined by mildly pleomorphic cuboidal cells. Mitotic activity was low with no marked nuclear atypia or stromal invasion. No extraovarian implants or metastases were identified.

Keywords: Papillary Cystadenomas, Ovary, Tumor

Introduction

Serous ovarian tumors which comprise about 20-25% of all ovarian tumors are usually cystic neoplasms. Some exhibit extensive fibroblastic stroma and based on the amount of cystic component, they are called adenofibroma, cystadenofibroma (benign), adenocarcinofibroma and cystadenocarcin-ofibroma (borderline or malignant). The borderline and malignant adenofibromatous variants are extremely rare (1-4). Only 44 cases of ovarian serous adenocarcinofibroma have been reported until 1999 (2). Even rarer, is presence of micropapillary pattern in serous borderline adenofibromatous tumors (4**)**. A group of investigators from the Baltimore-Washington (B-W) made the important observation that rare serous borderline tumors with micropapillary/cribriform pattern are associated with a higher frequency of bilaterality, surface involvement and invasive implants in

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extraovarian tissue, as well as worse prognosis than typical serous borderline tumors (5). However, others believe that in the absence of invasive implants, presence of this pattern has no adverse prognostic significance (4).
The present report introduces a patient with a borderline ovarian tumor showing coexistence of two rare features, i.e. prominent fibroblastic stromal component and prominent micropapillary pattern. This combination has not been reported in English Medical literature.

Case Report

A 27-year-old female with primary infertility for 6 years presented with diffuse abdominal pain and dysparonia. On pelvic examination, a mobile right adnexal mass was detected. The rest of the physical exam was unremarkable. All routine laboratory investigations including complete blood count, serum electrolytes, urea, creatinine, and liver function tests were normal. The tumor markers including CA 125, CA-15-3, CA 19-9, CEA and β-HCG were within normal limits.
Pelvic sonography showed bilateral ovarian masses; a 4.5x4 cm solid right ovarian mass, and a 5.3x4 cm solid mass with focal calcifications in left ovary. No fluid was present in the cul-de-sac.
At laparotomy, both ovarian masses were completely encapsulated and could be removed completely and easily. The impression of the gynecologists was leiomyoma; however, frozen section examination was requested which showed a borderline papillary serous tumor, and the definitive diagnosis was deferred. The residual ovarian tissue on both sides was unremarkable and was not removed to preserve fertility. She underwent surgical staging.
On gross examination, both tumors were completely encapsulated, elastic, ovoid measuring 5.3x4x3 and 4.5x4x3 cm, with tan-pink bosselated smooth external surfaces, and solid tan and lobular cut surfaces (Fig. 1).

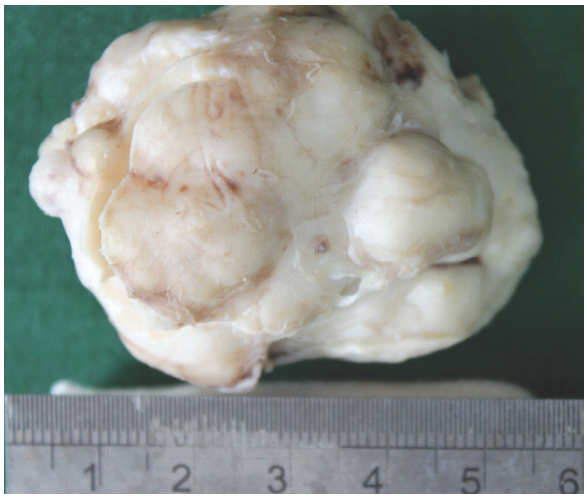

Fig. 1- The gross appearance: Encapsulated, and with solid cut surface

Microscopically, both tumors showed similar features; a neoplasm composed of many papillary structures with broad hyalinized fibrotic stroma with more than 10% micropapillary projections arising from the main papilla, lined by mildly pleomorphic cuboidal cells (Fig. 2). Mitotic activity was low and necrosis was not present. Multiple psammoma bodies were also identified. No marked nuclear atypia or stromal invasion was detected in extensive sampling of the tumors.
No implants or metastasis was observed microscopically in staging specimens and peritoneal washing was negative for malignant cells. She had an uneventful post-op and was discharged in good health. She has not referred for follow up since then.

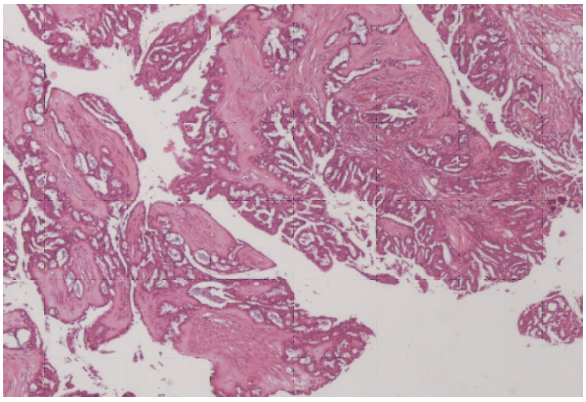

Fig. 2: The microscopic appearance: Micro papillary structures arising from broad papillary cores (×100 H&E staining)

Discussion

Ovarian borderline tumors which are mostly of serous or mucinous type, are uncommon (1, 3-6). Many of these tumors are incidental findings, producing no sign or symptom. However, abdominal pain (a feeling of pressure), is a commonly reported symptom (7) followed by vaginal bleeding (2, 3). Our case presented with abdominal pain and dysparonia and had a history of 6-year infertility which is reported frequently in borderline serous tumors (3).

According to Seidman *et al.* (3), the "borderline" category of ovarian serous tumors encompasses a wide histologic spectrum that correlates with behavior. At one end of the spectrum are tumors with benign behavior and hierarchical branching papillae termed "atypical proliferative serous tumors (APST)". At upper end of spectrum are those classified as "noninvasive micropapillary serous carcinoma (MPSC)" which act like low-grade carcinoma and have more complex branching pattern with micropapillae (14-26% of serous borderline tumors).

On microscopic examination, serous borderline tumors characteristically exhibit papillary proliferation of hobnail round or polygonal cells, sometimes with a stromal core. The cells are mildly or at most moderately atypical and show stratification and tufting with resultant small detached groups of cells (3, 4). Mitoses are not common (3, 8). Micropapillae are peripherally located fine elongated structures with minimal fibrovascular support which arise directly from large central papillae. The cells show mild atypia and there is no stromal invasion. Presence of either a 5 mm confluent area (4, 9, 10), or 10% or greater proportion of the cribriform and/or micropapillae (6, 11) justifies classification as "noninvasive MPSC" (3).

Presence of extensive areas of micropapillary and/or cribriform epithelial overgrowth increases the incidence of bilaterality up to 70% (such as our case) and invasive extraovarian implants (not present in this patient) (3-6, 9). The significance of micropapillary/cribriform pattern in serous borderline tumors is debated considerably (3-5, 9-11). The B-W group proposed the borderline tumors with either or both of micropapillary and cribriform patterns be designated "micropapillary carcinomas" even in the absence of stromal invasion, due to worse prognosis of these tumors compared to the typical serous borderline tumors (5). Some investigators, however, believe that in the absence of invasive extraovarian implants, micropapillary/cribriform pattern in a serous borderline tumor has no adverse effect on prognosis and the tumor must be called as a "serous borderline tumor with micropapillary architecture" (4, 6). Extensive sampling of extraovarian tissue is highly recommended in these cases (4).

Very rarely, serous borderline tumors involve adenofibromas or cystadenofibromas (3-5). Micropapillary/cribriform growth pattern is possible in serous borderline tumors (4); however, it is an extremely rare finding in serous borderline adenofibromatous tumors and is not previously reported.

Due to rich fibroblastic stromal component, they appear grossly as completely solid or as foci of solid, white, nodules in an otherwise typical cystic neoplasm (5). Our case had bilateral solid tan-pink tumors with lobular cut surface and no cystic component. It was difficult to distinguish the present case from leiomyoma or fibroma on gross examination as observed by others (2). Moreover, the serum level of CA-125, which is a marker of malignant ovarian tumors, was normal. Normal serum level of CA- 125 is also reported in a

few cases by others, and is proposed to be the result of the fibrous stroma surrounding the tumor cells, preventing the entrance of tumor antigens into the blood (2).

In our case, the typical microscopic features of "serous borderline adenofibromatous tumor with micropapillary architecture" or "noninvasive MPSC" were present. Marked nuclear atypia or stromal invasion was not noted in multiple sections examined.

Differentiation from APST is by presence of a 5 mm diameter area of confluent micropapillary pattern or 10% of tumor showing the micropapillary architecture (3, 6). Micropapillary pattern is usually absent in adenofibroma and cystadenofibroma, and atypia and stratification are either absent or present in less than 10% of the cells. Other differential diagnoses are invasive MPSC in which stromal invasion is present and serous carcinoma which is diagnosed by stromal invasion and/or marked nuclear atypia (3, 4).

This case is reported due to the rarity of borderline adenofibromatous tumors (3, 4). Presence of extensive micropapillary pattern in these tumors has not been reported in English Medical literature. We would also like to emphasize that since these tumors could be mistaken for invasive cancer, the pathologists should avoid making a definitive diagnosis at frozen section examination, especially in patients who would like to preserve fertility.

Acknowledgements

The authors declare that there is no conflict of interests.

References

1. Rosai J. Rosai and Ackerman's surgical pathology. 9th ed. New York: Mosby; 2004.

2. Ookura N, Nishida T, Ushijima K, Muraoka Y, Ohbuchi M, Sugiyama T, *et al.* Serous adenocarcinofibroma of the ovary--report of two cases and review of the literature. Kurume Med J 1999;46(2):133-6.

3. Kurman RJ, Ellenson LH, Ronett BM. Blaustein's Pathology of the female genital tract. 6th ed. New York: Springer; 2011.

4. M$_c$cluggage WG, Ovarian Borderline tumors:A Review with Emphasis on Contraversial areas. Diagnostic Histopathology 2011;17:178-92.

5. Mills SE, Carter D, Greenson JK, Oberman HA, Reuter V, Stoler MH. Sternberg's Diagnostic surgical Pathology. 4th ed. Philadelphia: Williams & Wilkins; 2004.

6. Longacre TA, McKenney JK, Tazelaar HD, Kempson RL, Hendrickson MR. Ovarian serous tumors of low malignant potential (borderline tumors): outcome-based study of 276 patients with long-term (> or =5-year) follow-up. Am J Surg Pathol 2005;29(6):707-23.

7. Freedman SI. Adenofibrocarcinoma of the ovary. Atypical histologic patterns in four patients. Obstet Gynecol 1972;39(5):649-810.

8. Crum C, Lee K, Genest D, Granter SR, Haefner HK, Mutter JL, *et al*. Diagnostic Gynecologic and Obstetric Pathology. 1st ed. Philadelphia: Saunders; 2006.

9. Silverberg SG, Bell DA, Kurman RJ, Seidman JD, Prat J, Ronnett BM, *et al.* Borderline ovarian tumors: key points and workshop summary. Hum Pathol 2004;35(8):910-7.

10. Seidman JD, Soslow RA, Vang R, Berman JJ, Stoler MH, Sherman ME, *et al.* Borderline ovarian tumors: diverse contemporary viewpoints on terminology and diagnostic criteria with illustrative images. Hum Pathol 2004;35(8):918-33.

11. Roma A, Malpica A, Deavers M, Silva E. Ovarian serous borderline tumors with a prominent micropapillary pattern are aggressive neoplasms with an increaded risk for low grade serous carcinoma. Modern Pathol 2008;21:221A.