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Brenner tumour of the ovary - an incidental histological finding

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Summary

Brenner tumours of the ovary are uncommon neoplasms and mostly benign. There is general agreement that Brenner tumors are derived from the surface epithelium of the ovary or the pelvic mesothelium through transitional cell metaplasia. It is essential to categorise these tumours as benign, borderline or malignant type as the biologic behaviour and choice of surgery differs in all of the three categories. The authors report a case of Brenner tumour that had only a single area with a beginning indistinct stroma vessel invasion. However the presence of characteristic epithelial nests, fibromatous stroma, and marked cytological metaplasia without atypia provided important clues to the correct diagnosis - proof of a benign tumour.

Key words: Ovary Brenner tumour; Benign.

Introduction

Brenner tumour was first described by Fritz Brenner in 1907. It is a solid (mostly) tumour of the ovary, derived from the surface epithelium of the ovary which has the properties of coelomic epithelium that underwent metaplastic morphological change to transitional or urothelial epithelium [1-4]. The incidence ranges from 1.4% to 3% of all ovarian tumors [5]. Out of all the Brenner tumours less than 2% are either borderline proliferating or malignant type and in the majority of cases (95%) are benign [6]. Malignant Brenner tumours arise mostly in peri- and postmenopausal period. Benign Brenner tumours of the ovary occur in the majority of patients presenting between 40 and 59 years of age [5, 7]. The majority of Brenner tumours are not clinically apparent due to their small size (usually less than two cm) and occur as incidental findings: either intraoperatively for various indications-occasionally result from intraoperative frozen sections consultation or either pathological examination of the ovaries [8]. Transitional cell (Brenner) tumours are more commonly unilateral than bilateral [5]. Bilateral occur only in 5-7% of the cases [9]. The authors present a case of benign Brenner tumour of the ovary with beginning stroma vessel invasion treated surgically.

Case Report

The patient was a 46-year-old, gravida 3, para 2 woman who visited the emergency gynaecological room of hospital because of gradually increasing lower abdominal pain independent from menstruation. She had no past medical history, no systemic symptoms, no menstruation anomalies, no previous operations, and took no medications. The pregnancy test was negative. Her blood chemistry examination revealed no abnormality in steroid hormonal status and the serum levels of the CEA, CA 125, SCC, and CA72-4 were in normal range. On per speculum examination, vaginal wall and cervix had normal appearance. Bimanual vaginal examination revealed a solid palpable mass of 4 x 4 cm size, anterior to uterus in the left lower part of the abdomen and pelvis. Uterus was mobile and normal in size. Transvaginal sonography was performed and showed the presence of a large solid, hypoechoic cystic mass 5 x 4 cm in the left ovary while the right ovary had a normal appearance. Doppler assessment showed presence of normal blood flow to the both ovaries. The vaginal ultrasound measured an endometrium thickness of three mm with distinct borders, giving a relatively safe prediction of endometrial atrophy. Magnetic resonance imaging (MRI) showed a 5 x 4 x 3 cm, well-defined mass with distinct borders. The tumour was predominantly cystic with thickened septa. All the solid components showed mild homogeneous enhancement on post-contrast MRI. During the laparoscopy that ensued, the following findings were noted: in the left ovary there was a tumour located in the hilar region, which was not connected to the covering of the ovary and loose pelvic adhesions between left ovary and uterus. The right ovary, uterus, both the fallopian tubes, and the rest of the pelvis were otherwise normal. Initially, the surgery was performed by utero-ovarian adhesiolysis and a total adnexectomy ensued. Peritoneal washing was taken for cytology. An omental and contralateral right ovarian biopsy were intraoperatively performed. The entire gonad was removed because of the total loss of functional ovarian tissue surrounding the cyst. The extracted material was submitted for a quick histopathological examination, frozen section at the time of surgery, and it was negative for malignancy.

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The final histological examination revealed a typical borderline tumor consisting of well circumscribed epithelial cells developed in nests and solid sheets. The sheets of epithelial cells were separated by sparse intervening stroma and were found with sharply demarcated borders, which were surrounded by abundant fibromatous stroma. The epithelial cells were ovoid or polygonal with pale cytoplasm and oval nuclei. Mitoses were rarely present, but the tumor displayed no cytological atypia and lacked stroma invasion. Nuclear pleomorphism and irregular nuclear membranes were identified. Only one single section showed the beginning of stromal invasion. However, the presence of the main part of benign tumor component determined the total benign character of the tumor. No necrosis or hemorrhage was observed. No malignant cells were confirmed on the cytology of peritoneal fluid and on right ovarian biopsy. The intra- and postoperative course was uneventful. She left hospital two days after the operation. The patient was discharged with the advice of regular follow-up visits at a six-months interval for five years. In the present case the follow up clinical and laboratory examinations revealed no clinical complications and recurrence.

Discussion

The occurrence rate of synchronous gynaecologic malignancies varies from 0.7% to 1.8% in patients with gynaecologic tumours [10]. Brenner tumours of the ovary are included in the epithelial ovarian tumours, are generally solid and asymptomatic, and occur in up to 30% simultaneously with serous and mucinous cystadenomas or rarely with cystadenocarcinomas [11, 12]. Brenner tumors are often associated with endometrial disorders related to estrogen production expressed by estrogenic activity [13]. These tumors represent lesions of Müllerian system which present the ability of metaplastic change to various epithelial cell types like: tubal, endometrial, endocervical, and urothelial [5]. The symptoms of borderline and malignant Brenner tumours are non-specific and include abdominal distention, pain, and genital bleeding [14, 15]. Preoperatively it is difficult to diagnose Brenner tumour with imaging techniques like ultrasonography or computed tomography due to the tumour's non-specific appearance. Brenner tumours are generally share similarities to other solid ovarian masses like fibroma, fibrothecoma, and pedunculated leiomyomas. [16, 17]. Considering that the vast majority of Brenner tumours are benign, precise identification of the small proportion of malignant tumours allows for the extent of surgical therapy to be adapted. The treatment is essentially surgical resection in benign and borderline cases.Thanks to their vividly circumscribed nature, they are easy to identify and do not affect surrounding tissue. In these cases the surgical resection is curative [18, 19]. Borderline and malignant Brenner tumours are typically larger than their benign counterparts and have similar macroscopic appearance due to cystic parts with papillar projections [16]. The treatment in malignant cases that affect surrounding tissue and their rarity has not been developed. Metastasis occurs in half of the cases which are mostly loco-regional. The efficiency of an additive treatment seems to be debatable [20]. Apart from identification of typical benign, metaplastic, and/or proliferating components, stomal invasion must be observed for diagnosis of Brenner tumours [21]. The histologic features of proliferating Brenner tumours are similar to those of low grade, papillary, non -invasive Brenner tumours of low malignant potential and remain non-invasive in the ovary [22]. The epithelial cell nests may be solid and associated with central lumen with eosinophilic or mucinous material. The immune phenotype of Brenner tumours, specifically uroplakin III positive immune reaction, is fairly constant according to reported findings in the literature review. Malignant Brenner tumours are often cystic and sometimes necrotic or hemorrhagic and histopathologically stromal invasion is found [16, 23]. In borderline Brenner tumours there is no stromal invasion and less intervening fibrous stroma. [24] Brenner borderline tumour classification is reported in the literature and divide these tumours in grade I (borderline, not otherwise specified) and grade II –III (borderline with intraepithelial carcinoma) [5]. Large multicentric studies and further investigations are needed prospectively to collect information on ultrasound features specific to Brenner tumours in order to develop standard surgical management in borderline and especially in malignant cases.

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