Sonographic findings of an ovarian serous surface papillary borderline tumor

Yohan Kwon, Sung Bin Park⁎, Jong Beum Lee, Hyun Jeong Park

Department of Radiology, Chung-Ang University Hospital, Chung-Ang University College of Medicine, 102, Heukseok-ro, Dongjak-gu, Seoul 156–755, Korea

Article history:
Received 23 April 2013
Accepted 5 July 2013

Keywords:
Ovary
Serous tumor
Borderline malignancy
US
MRI

1. Introduction

Ovarian serous tumors are a major subtype of ovarian surface-epithelial stromal tumor. Usually they are classified as benign (60%), borderline (15%) and malignant (25%) according to its biological nature [1]. Serous surface papillary tumors are a distinct subtype of serous tumor of the ovary, in which the tumor is confined to the ovarian surface and the normal size and shape is preserved.

Although a serous surface papillary borderline tumor (SSPBT) is a borderline form of serous surface papillary tumor and not extremely rare, to our knowledge, the imaging findings have been described in few articles [2–4]. Here, we report the case of a young female with bilateral ovarian tumors that were diagnosed as SSPBT based on histopathologic examination.

2. Case report

A 27-year-old woman was referred to our hospital for evaluation of ovarian lesions incidentally detected on routine gynecological ultrasonography (US). She had no specific past medical history. She denied gynecologic symptoms such as vaginal bleeding, changes in menstruation and no pelvic pain. Physical examination showed tenderness in both lower quadrants. Laboratory tests including a complete blood count, electrolyte levels and liver function tests were all within normal ranges. The level of serum cancer antigen (CA)-125 was elevated to 178.4 (reference value – 35).

Endovaginal US was performed. The US (IU 22, Philips Medical Systems, Bothell, WA, USA), equipped with an end-viewing endova-

⁎ Corresponding author. Department of Radiology, Chung-Ang University Hospital, Chung-Ang University College of Medicine, 102, Heukseok-ro, Dongjak-gu, Seoul 156–755, Korea.
E-mail address: pksungbin@paran.com (S.B. Park).

0899-7071/– see front matter © 2013 Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.clinimag.2013.07.001
Sometimes, these tumors may be detected incidentally, as in the case reported here [5].

The spectrum of proliferative changes in surface-epithelial stromal tumors ranges from benign to borderline to malignant. The current World Health Organization classification defines a borderline tumor as one that exhibits atypical epithelial proliferation greater than that seen in its benign counterparts but without destructive stromal invasion [1,2]. Approximately, 15% of serous tumors are classified as borderline malignant [1], and patients with serous borderline tumors tend to be 10–15 years younger than those with serous carcinoma. The clinical importance of borderline tumors is that they have a better prognosis than their malignant counterparts [6], even with intraperitoneal dissemination or lymph node metastasis [7–9]. Therefore, preoperative imaging of these tumors to help diagnosis has great significance in determining the appropriate course of treatment.

Imaging findings described as SSPBT of the ovary are limited [2–4]. Furthermore, only one case report [4] described US finding of SSPBT. In these previous studies, the masses were bilateral, almost entirely solid and showed hyperintense papillary architecture with hypointense internal branching on T2-weighted MRI. Multiple solid and cystic areas, some with a central area of intermediate echogenicity and with prominent vascularity, were dominant US features [4]. In our case, smoothly lobulated and polyloid heterogeneous echoic bilateral adnexal masses encased or surrounded by presumably normal ovarian follicles (Figs. 1A and B) were noted on US. On Doppler imaging, increased vascular flow within the mass was evident (Fig. 1C), as in the case reported previously.

Fig. 1. (A) & (B) Gray-scale endovaginal US shows smoothly lobulated and polyloid heterogeneous echoic bilateral adnexal masses (arrows) encased or surrounded by presumably normal ovarian follicles (arrowheads). (C) Doppler endovaginal US of the right ovary shows increased vascular flow within the mass.

Fig. 2. Coronal T2-weighted MRI of the pelvis shows bilateral ovarian masses that are entirely multilobulated with hyperintense papillary architecture on the surface (arrows) and hypointense internal branching patterns (arrowheads). The masses involved the surface of both ovaries, but the otherwise normal-appearing ovaries with multiple follicular cysts and distorted shape are clearly discriminated. The tumors were homogeneously hypointense on T1-weighted MRI and their surfaces were intensely enhanced on contrast-enhanced T1-weighted MRI (not shown).

Fig. 3. The gross findings obtained via laparoscopy shows papillary exophytic proliferation from the surface of the ovary (arrow).
US is the preferred initial diagnostic modality for gynecologic disease and captures real-time images of organs and blood flow without radiation hazards [10]. The primary screening imaging modality for suspicious adnexal masses is transvaginal or transabdominal US. MRI can be used as a problem-solving tool when US and computed tomography findings are equivocal or suboptimal. Many indeterminate adnexal masses can be characterized further by MRI.

Different imaging features aid in the classification of serous surface papillary tumors. Serous surface papillary adenocarcinomas manifest as extensive peritoneal masses with a large amount of ascites without definite masses in normal-sized ovaries [11]. SSPBTs may be more prominent than peritoneal masses [3]. When using imaging for diagnosis, ovarian tumors with a rich solid tissue are considered malignant [2,4,12]. Therefore, SSPBT of the ovary would be diagnosed as a highly malignant tumor because it forms entirely solid masses.

Awareness of this disease entity is very important in diagnosis and determining the appropriate treatment options.

In summary, we reported a case of serous surface papillary borderline ovarian tumors. The lesions were depicted on US as smoothly lobulated and polypoid heterogeneous echoic bilateral adnexal masses encased or surrounded by what was presumed to be normal-appearing ovarian follicles with increased vascular flow. The tumors were also depicted on MRI as almost entirely solid and showed hyperintense papillary architecture with hypointense internal branching on T2-weighted imaging. Familiarity with these characteristic imaging findings may facilitate prompt and accurate diagnosis and treatment.

References
