Metastatic granulosa cell tumor of the ovary - A cytologic disposition

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Case Report

Abstract

Adult granulosa cell tumor (GCT) of the ovary is oftentimes a hormonally active, stromal cell neoplasm that is distinguished by its ability to secrete sex steroids such as estrogen and is mostly diagnosed in postmenopausal women. Patients may present with vaginal bleeding as a result of prolonged exposure to tumor-derived estrogen. In addition, GCT is a vascular tumor that may occasionally rupture and result in abdominal pain, hemoperitoneum, and hypotension, mimicking an ectopic pregnancy in younger patients. We report a rare case of a metastatic adult granulosa cell tumor of the ovary in a 25-year-old woman who presented with abdominal swelling and pain for the last 6 months with an ill-defined, firm left adnexal mass on pelvic examination with ascites. Cytological impression of the ascitic tap was suggestive of Granulosa cell Tumor. Histopathology of the mass confirmed the cytopathological diagnosis.

Keywords: Fine Needle Aspiration Cytology; Adult Granulosa Cell Tumor; Metastasis

Introduction

Adult granulosa cell tumors (AGCT) account for approximately 1% to 2% of all ovarian tumors and 95% of all granulosa cell tumors. They show either a pure (100%) or limited (at least 10%) population of granulosa cells embedded in fibro-thecomatous stroma. Occur more often in post-menopausal than pre-menopausal women, these tumors show a peak incidence between 50 and 55 years of age.

They are the most common estrogenic ovarian tumors diagnosed clinically. Patients may present with vaginal bleeding caused by endometrial hyperplasia or uterine cancer as a result of prolonged exposure to tumor-derived estrogen. Despite their generally good prognosis, patients with GCTs require monitoring over a long period of time, due to a high probability of relapse. Fine needle aspiration cytology (FNAC) of adult GCT has been described in a few reports.

However, the diagnosis of this tumor in a metastatic site with an unknown primary is a challenge.

We report here the characteristic diagnostic finding of Call–Exner bodies in an FNAC from ascitic tap in a 25-year-old woman, in whom the diagnosis of GCT was not previously suspected, but was made by FNAC and subsequently confirmed by histopathologic evaluation.

Case presentation

A 25-year-old woman presented to the gynaecology out-patient department of our hospital with abdominal swelling and pain for the last 6 months. An ill-defined, firm left adnexal mass was felt on pelvic examination. On radiology, ascites was present and mass showed solid areas with foci of cystic change and haemorrhage.

Ascitic tap was performed and alcohol wet-fixed smears were prepared and stained with Papanicolaou (Pap) and Hematoxylin and Eosin. Smears showed a highly cellular aspirate composed of tumour cells arranged in well-spread loose aggregates and tight clusters with prominent hypercellular foci showing a microfollicle-like arrangement.

The tumour cells were round to oval with cytoplasm varying from scant to moderate in amount. Nuclei were round to oval with granular chromatin and mild nuclear hyperchromasia. Nuclear grooves and indentations were also noted in a small number of cells (rentiform and fetiform nuclei).

(Figure 1) Cytological impression was suggestive of Granulosa cell Tumor.

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The tumor was staged according to the International Federation of Gynecologists and Obstetricians (FIGO) classification system into Stage IC, and was put on BEP chemotherapeutic regime. The dosage and schedule of administration of BEP consisted of bleomycin, 10 to 15 mg daily on days 1 through 3 by continuous intravenous (IV) infusion; Etoposide, 100 mg/m² IV daily on days 1 through 3; and cisplatinum, 100 mg/m² IV on day 1. Cisplatin was mixed in 1 litre of 1 N saline with 50 g of mannitol and delivered IV over 4 hours. This regimen was repeated at 4-week intervals and 6 cycles were given to the patient. The patient is doing well after 12 months of follow up period.

**Discussion**

Granulosa cell tumour of the ovary is of sex cord stromal origin. Approximately 95% of GCTs are adult GCT (AGCT) type, occurring predominantly in postmenopausal women, with a peak age of 50-55 years. The remaining 5% consists of juvenile GCTs (JGCTs), occurring most commonly in the first 2 decades of life. AGCTs secrete high levels of estrogen which can manifest as menorrhagia and metrorrhagia. Endometrial hyperplasia occurs in 50-60% of patients and endometrial adenocarcinoma in about 5-10%. Rarely, AGCTs can produce androgens and may be virilising.

Histopathologically, AGCTs exhibit various growth patterns, Including microfollicular, macrofollicular, trabecular insular, solid and diffuse (sarcomatoid). The most characteristic histologic feature are the presence of Call-Exner bodies (small tumor cells arranged around small cavities containing pinkish material) and longitudinal nuclear grooves resembling coffee beans.

In FNA cytology, AGCTs are hypercellular, with small tumor cells arranged singly or in loose sheets. Call-Exner bodies may be observed. Nuclei are uniform, pale and coffee bean shaped with micronucleoli. Benign spindle-shaped stromal cells (theca cells) coexisting with malignant granulosa cells have been reported. Blood vessels with prominent perivascular tumor cell growth, mixed inflammation, tumor cell necrosis, prominent metachromatic stroma in association with blood vessels and small punctate cytoplasmic vacuoles have also been reported in cases of AGCT.

Most GCTs (70–90%) are pathological Stage I disease at diagnosis. Patients with GCT require long-term clinical follow-up because of the unpredictable behaviour and tendency to recur and metastasize many years after a disease-free interval. FNAC has established itself as an easy and valuable technique in the diagnosis of ovarian and abdominal masses. Initial and later reports of ovarian GCT diagnosed on FNAC material have emphasized the importance of nuclear grooves, although Call–Exner bodies have been seen less frequently and may not be well formed. The presence of Call–Exner...
bodies is characteristic of adult GCT, but may be absent in poorly differentiated tumors, and is not a feature of juvenile GCT. 2-4 Patients may develop late recurrences up to 20 to 30 years after the initial diagnosis, so prolonged surveillance is mandatory. Ten percent of recurrences are associated with ascites; however, identification of neoplastic cells in ascitic fluid may be difficult due to the paucity of exfoliated tumor cells. FNA cytology of metastatic AGCT has been reported in liver, lung, and bone. Our case involved the left ovary with capsular breach and malignant ascitis and FNAC helped to establish the diagnosis.

Conflict of interest
The authors declare that they have no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

References