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Case Report

Struma ovarii in a euthyroid patient: a histopathological diagnosis

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ABSTRACT

Struma ovarii is a rare monodermal variant of ovarian teratoma composed predominantly of thyroid tissue, accounting for approximately 0.3–1% of all ovarian neoplasms. It is rarely associated with thyroid dysfunction. Due to the absence of distinctive clinical and radiological features, establishing a preoperative diagnosis is often challenging, particularly in euthyroid patients. We report a case of benign struma ovarii in a euthyroid patient, diagnosed exclusively by histopathological examination. A 40-year-old woman presented with lower abdominal pain. Clinical examination revealed bilateral adnexal masses. Imaging studies, including ultrasonography (USG) and contrast-enhanced computed tomography (CECT) of the abdomen and pelvis, were suggestive of bilateral ovarian teratomas. Thyroid function tests were within normal limits, confirming her euthyroid status. The patient subsequently underwent total hysterectomy with bilateral salpingo-oophorectomy. Gross examination revealed cystic masses in both ovaries. Histopathological evaluation demonstrated struma ovari in the right ovary, characterized by the presence of predominant thyroid tissue. The left ovary showed features consistent with a mature cystic teratoma.
The postoperative period was uneventful, and the patient remained clinically and biochemically euthyroid on follow-up. Struma ovarii is an uncommon ovarian neoplasm that lacks specific clinical and radiological characteristics, rendering preoperative diagnosis difficult, especially in euthyroid individuals. Histopathological examination remains the gold standard for definitive diagnosis.

Keywords: Struma ovarii, Adenexal mass, Teratoma, Hyperthyroidism

INTRODUCTION

Struma ovarii is a rare type of monodermal ovarian teratoma which accounts for 0.3-1% of all ovarian tumors and 2.7% of all teratomas of ovary.[1] To qualify as a struma ovarii, more than 50% of the tumor should be composed of thyroid tissue.[2] It is usually a benign condition; however, malignant transformation occurs in less than 5% of them.[3]

Struma ovarii typically occur between the ages of 30 and 50 years.[2] About 5–8% of patients with struma ovarii have clinical signs of hyperthyroidism.[4,5] It is difficult to diagnose these cases preoperatively as there are no specific clinical and radiological features or serum markers in the absence of thyroid abnormality. The diagnosis of struma ovarii is most often made postoperatively only after histopathological evaluation.

We present a case of struma ovarii diagnosed postoperatively through histopathological examination of the surgical specimen, highlighting its clinical presentation, preoperative imaging findings, tumor size and laterality, and the gross and microscopic pathological features.

CASE REPORT

A 40-year-old, P5L5, woman presented with complaints of lower abdominal pain for the past two months. She had

history of bilateral tubal ligation 15 years back. She had no significant family history of thyroid disease or ovarian tumours.

Clinical findings

On examination, her pulse rate was 78 beats per minute and her thyroid was not enlarged. She had a non-tender, mobile abdominopelvic mass corresponding to 28 weeks size of gravid uterus, occupying hypogastric, umbilical, right lumbar and right iliac regions. It was predominantly cystic with firm at places. There was no clinical evidence of ascites. On bimanual examination, the mass felt separately from the uterus. Another cystic mass felt through left fornix.

Laboratory tests

Thyroid function test: normal, tumour markers: within normal limit.

Imaging

Ultrasound (abdomen and pelvis) showed a complex adnexal mass measuring 17.9 x 16.8 x 11.4 cm with cystic and solid components and thin septations in right adenexa. A well-defined hypoechoic lesion measuring 7.8 x 6.5 x 4.0 cm with thick septa in left adenexa. Uterus with cervix measured 8.9 x 7.7 x 3.7 cm.

A contrast-enhanced computed tomography (CECT): abdomen and pelvis revealed a multiloculated abdominopelvic mass measuring 18 x 17 x 11 cm predominantly cystic lesion with solid enhancing moral nodule measuring 7.8 x 4.8 x 4.5 cm with evidence of fat density pocket and tiny specks of calcification within arising from right ovary. Another cystic lesion measuring 7.9 x 6.7 x 3.9 cm with fat fluid level and peripheral calcification in left adnexa. No evidence of free fluid or lymphadenopathy Impression: bilateral ovarian teratoma.

Preoperative management

The patient underwent preoperative evaluation and pre-anesthetic checkup (PAC) fitness was taken.

Management

The patient underwent exploratory laparotomy.

Per-operative findings

A large right ovarian mass was identified, measuring 18 x 17 x 11 cm, capsule intact, glistening surface with areas of focal bosselation and prominent congested blood vessels, predominantly cystic with solid at places (Figure 1). A left cystic ovarian mass was identified measuring 8 x 7 x 4 cm, with white, smooth thick capsule, and prominent congested vasculature (Figure 1). Uterus multiparous size. Both fallopian tubes were unremarkable.

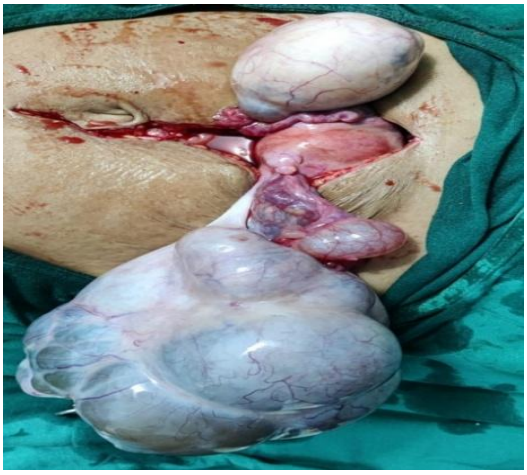

Figure 1: Intraoperative photograph showing a large multiloculated cystic mass arising from the right ovary and left ovarian cystic mass with a smooth, thick capsule.

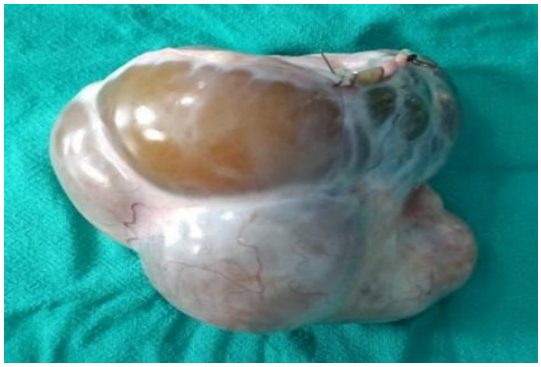

Figure 2: Gross specimen of a large multiloculated right ovarian cystic mass with a smooth glistening surface and intact capsule.

Figure 3: Gross specimen of a left ovarian cystic mass with a smooth, thick intact capsule and surface vascularity.

Bilateral ovarian masses with fallopian tubes removed and sent for frozen section which was suggestive of struma ovarii in right ovarian mass and mature teratoma in left ovarian mass. Uterus with cervix was removed and sent for histopathological examination.

Histopathologic examination (HPE): right oophrectomy specimen showed struma ovarii, left oophrectomy specimen showed mature cystic teratoma, both fallopian tubes were unremarkable, cervix: chronic cervicitis, uterus: endometrium prolifeartive myometrium unremarkable (Figure 4 and 5).

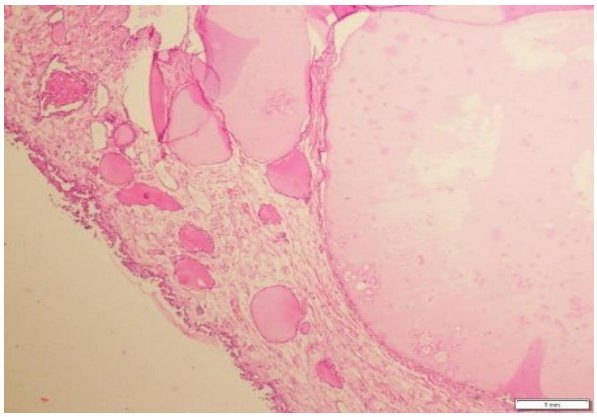

Figure 4: Photomicrograph of a formalin-fixed section of struma ovarii showing thyroid follicles of varying sizes filled with eosinophilic colloid and lined by cuboidal epithelium.

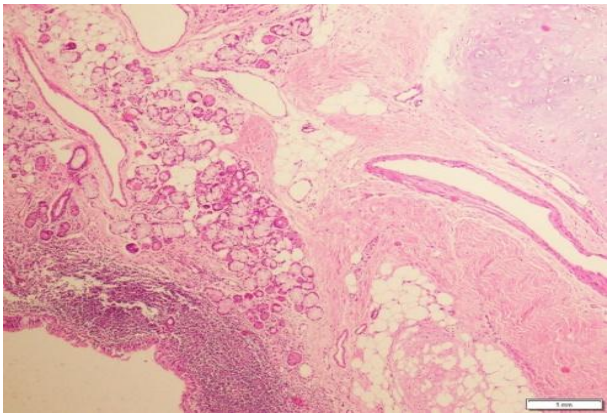

Figure 5: Photomicrograph of a formalin-fixed section of mature cystic teratoma demonstrating elements derived from multiple germ layers, including adipose tissue, cartilage, and glandular structures.

Postoperative course and follow-up

The patient had an uneventful recovery. The patient was monitored for any signs of thyroid dysfunction. Patient remained asymptomatic with normal thyroid function.

DISCUSSION

Previous reports have shown that patients with struma ovarii often exhibit no symptoms or present with vague, non-specific complaints similar to those seen in other types of ovarian tumors.[6] Clinical manifestations, when present, are varied and may include lower abdominal pain, palpable lower abdominal mass, abnormal vaginal bleeding, ascites, hydrothorax, elevated thyroid function, and rarely thyroid tumors.[7,8] In our case, the patient reported lower abdominal pain. According to a study by Yoo et al, 41.2% of individuals with struma ovarii were asymptomatic. Among those who did have symptoms, the most common presenting symptom was palpable lower abdominal mass (23.5%) followed by lower abdominal pain (20.6%).[2]

Thyroid hyperfunction has been observed in approximately 5–8% of struma ovarii cases.[4,5] In our case, the patient exhibited no clinical signs or symptoms of hyperthyroidism. Thyroid function tests were conducted during the routine pre-anaesthetic evaluation. The absence of hyperthyroid symptoms, despite the presence of a large tumour, remains unexplained.

Benign struma ovarii is infrequently associated with elevated cancer antigen-125 (CA-125) levels.[9] In our case, the patient's CA-125 level was within normal limits.

Ultrasonography is useful in identifying ovarian masses; however, it accurately suggests a diagnosis of struma ovarii in only about 11.8% of cases. According to Yoo et al, there are no characteristic ultrasound findings specific to struma ovarii, though it may be considered when a mass presents with a prominent solid component.[10] A characteristic feature that has been described is the presence of a solid echogenic component with a smooth surface and internal vascularity called "struma pearls".[11] In our case, the ultrasound revealed a complex adnexal mass exhibiting heterogeneous echogenicity, containing both cystic and solid elements along with thin septations.

On CT imaging, struma ovarii typically appears as a smooth, well-defined, multicystic mass, often exhibiting a high attenuation lesion on pre-contrast scans and no or moderate cyst wall enhancement.[12]

In struma ovarii, magnetic resonance tomography (MRI) typically shows a multilocular cystic mass with variable signal intensity within loculi. Some loculi show low intensity on T1 weighted images and very low intensity on T2 weighted images, corresponding pathologically to gelatinous colloid material.[13] The presence of these markedly low-signal areas on T2-weighted images, caused by the viscous colloid content, is sometimes considered a suggestive feature for diagnosing struma ovarii.[13,14]

Due to nonspecific clinical and imaging features, the definitive diagnosis of struma ovarii is often established through histopathological examination of the resected cyst or ovary, which also allows for the assessment and exclusion of malignancy. Thorough examination is essential to ensure that no other tissue components are present before classifying the lesion as a monodermal teratoma. Histologically, struma ovarii is characterized by the presence of thyroid tissue resembling normal thyroid follicles of varying sizes and is often found in association with a mature cystic teratoma.

The primary treatment for benign struma ovarii is surgical removal. The secondary conditions such as thyroid hyperfunction, ascites, or hydrothorax if present, usually regress spontaneously upon surgical removal of the primary tumor. In our case, given the patient's multiparous status and the presence of bilateral ovarian masses, we opted for a total hysterectomy with bilateral salpingo-oophorectomy. For women who wish to preserve fertility, a more conservative approach—such as cystectomy or unilateral oophorectomy—is generally considered.

CONCLUSION

Struma ovarii is a rare ovarian tumor that is difficult to diagnose preoperatively due to nonspecific clinical and radiological features. Histopathological evaluation remains the gold standard for diagnosis. Clinicians should consider struma ovarii in the differential diagnosis of complex adnexal masses, even in clinically euthyroid patients. Early recognition and appropriate surgical management lead to excellent outcomes, with a favourable prognosis for benign cases.

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