Case Report

Struma Ovary with Thecoma: A Rare Case Report with Review of Literature

Riddhi Dilipbhai Parsana, Raj Shah*, Minesh B. Gandhi, Preeti Jhaveri, Cherry K. Shah

Department of Pathology, Smt. NHL Municipal Medical College, Ahmedabad, Gujarat, India

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***Corresponding Author**:
Dr Raj Shah
rshah9402@gmail.com

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Abstract

Mature cystic teratoma, commonly referred to as a dermoid cyst, is the most common benign germ cell tumor of the ovary in women of reproductive age. Thecomas, on the other hand, are mesenchymal tumors derived from the ovarian stroma, consisting of theca-like elements. These tumors are usually unilateral and predominantly observed in menopausal patients. In this case report, we present an elderly woman with both a mature cystic teratoma and a thecoma in the same ovary.

Keywords:

Urogenital neoplasms, Ovarian collision tumors, Mature cystic teratoma, Ovary, Thyroid gland

Introduction

Ovarian collision tumors represent a rare occurrence wherein two distinct tumor types coexist within the same ovarian tissue. These tumors can comprise a diverse array of histological types, ranging from benign teratomas to malignant carcinomas or sarcomas. Sex-cord stromal tumors constitute 8% of all ovarian neoplasms. These tumors contain gonadal cell types derived from the coelomic epithelium of the mesenchymal cells of the embryonic gonads [1]. They frequently occur in older, menopausal patients [2]. Mature cystic teratomas, also known as dermoid cysts, are a type of ovarian teratoma. They are categorized into two groups based on their characteristics: mature (99% of all ovarian teratomas) and immature (1%) [3]. These cystic tumors are composed of well-differentiated tissue derived from at least two of the three germ cell layers (ectoderm, mesoderm, and endoderm)

and are typically seen in younger patients, with a mean age of 30 years [4]. While thecomas are generally observed during the menopausal period, dermoid cysts are more common in younger individuals. Malignant struma ovarii, which accounts for approximately 5–10% of struma ovarii cases, can be histologically identified as differentiated thyroid carcinoma [5].

This case report presents a 64-year-old patient with both a thecoma and a mature cystic teratoma in the same ovary. Due to their rarity and histological complexity, diagnosing ovarian collision tumors can be challenging and often requires meticulous examination by pathologists, sometimes supplemented with immunohistochemical analysis. Treatment approaches for these tumors are multifaceted, typically involving a combination of surgery, chemotherapy, and possibly other modalities tailored to each tumor component. Prognosis varies depending on factors such as tumor types, staging, and treatment response.

Case Report

The patient, a 64-year-old woman (P0A1L0), experienced natural menopause at 12 years and had not undergone hormone replacement therapy. The patient presented with abdominal pain persisting for one month.

Transvaginal ultrasonography revealed a 4.4 x 3 cm hyperechoic solid lesion. MRI showed a 4 x 3 x 2 cm solid mass diagnosed as a cervical fibroid on the right posterolateral wall of the uterus, as well as a complex adnexal mass with solid and cystic components in the right adnexal area, diagnosed as a dermoid cyst. Biochemical investigations, tumor markers, and hormonal values were within normal limits.

During exploratory laparotomy, a 6 x 4 x 3 cm conglomerated adnexal mass on the right side with adhesions to the fallopian tube was identified and excised. Gross examination revealed a nodular mass measuring 5 x 4 cm. The cut surface of this mass displayed a yellow to tan-colored nodular lesion adjacent to a cystic area filled with greasy material and hair shafts. The resected specimen was sent for histopathological examination.

The specimen, measuring 7 x 4.5 x 2.5 cm, revealed a significant finding in the ovary, measuring 5 x 4 cm. This ovary exhibited a yellowish cystic area on its cut surface, within which a bunch of hair and cheesy material was discovered. Further examination identified a nodular mass adjacent to this cystic area, characterized by greasy material and hair shafts, indicative of a dermoid cyst. Additionally, a solid component was found neighboring the cystic area, representing the other tumor component in what appears to be a collision tumor.

Histological examination is crucial in identifying and characterizing tumor components within an ovarian collision tumor. The endometrium shows atrophic changes with normal-looking myometrium [Figure 1]. For the dermoid cyst component, analysis typically reveals tissues derived from the ectoderm, mesoderm, and endoderm, including mature skin, hair follicles, sebaceous glands, adipose tissue, and occasionally structures like teeth or bone.

The solid component's histological analysis aims to discern the tumor type, evaluating features such as cellular morphology, nuclear atypia, mitotic activity, and tissue organization. The ovarian sections demonstrate a cyst lined by stratified squamous epithelium with adnexal structures, including sebaceous glands and hair follicles, alongside thyroid follicles containing colloid and adjacent sheets of clear cells [Figures 2]. Importantly, no immature tissue or somatic malignancy is evident. This comprehensive histological assessment is vital for devising tailored treatment strategies and prognosticating patient outcomes.

Discussion

Struma ovarii constitutes 1% of all ovarian tumors and accounts for 2-5% of ovarian teratomas. It is defined by the presence of

thyroid tissue making up more than 50% of the overall mass. Struma ovarii most commonly occurs as part of a teratoma but may occasionally be associated with serous or mucinous cystadenomas [6]. Thyroid tissue is a relatively frequent component of mature teratomas, present in 5-20% of cases.

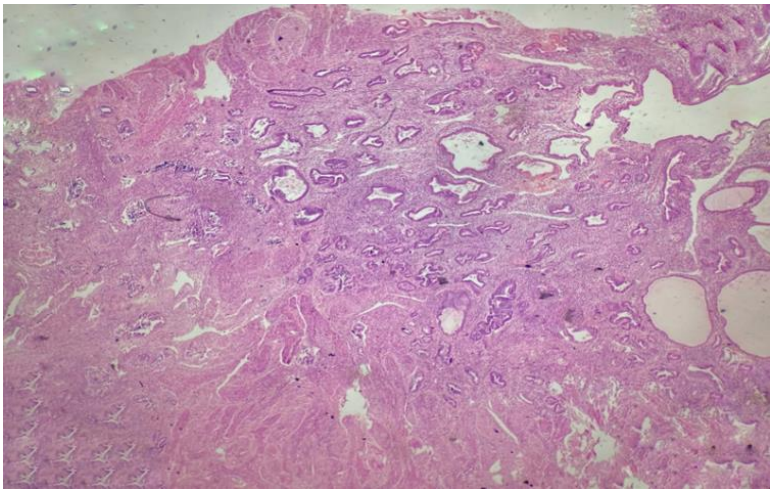

Figure 1: Endometrium showing atrophic changes with normal looking myometrium. (H and E stain, 20X)

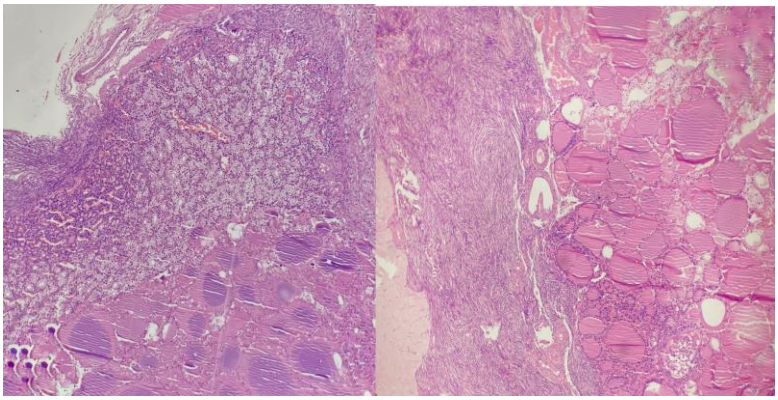

Figure 2: Presence of thyroid follicles containing colloid with adjacent sheets of clear cells. (H and E stain, 20X)

Thecomas, categorized as ovarian stromal tumors, are composed histologically of lipid-containing cells that closely resemble theca interna cells. Typically presenting as solid, spherical masses, they often exhibit a slightly lobulated appearance, appearing as grayish-white masses enveloped by glistening and intact ovarian tissue. These tumors may exhibit variable sizes and textures, contributing to their diverse clinical presentations. Additionally, they commonly occur as unilateral lesions but can, albeit rarely, manifest bilaterally. Thecomas are generally slow-growing tumors, with the majority being benign; however, malignant variants do exist but are infrequent. In ultrasonography, the characteristic finding is the presence of circumscribed, round, solid areas with smooth contours that correspond to colloid-rich thyroid tissue, a feature known as the “struma pearl” [7]. Thecomas are often misdiagnosed as exophytic fibroids or primary ovarian malignancies, accounting for 10-25% of ovarian tumors.

On histopathology, ovarian thecoma is characterized by the presence of spindle, oval, or round cells with nuclei that are bland, wavy, and fusiform. The tumor also contains theca cells composed of cells with abundant pale or vacuolated cytoplasm [8]. Most

patients with thecomas present with an asymptomatic adnexal mass discovered during routine pelvic examinations or with calcifications in the pelvis revealed on imaging performed for other indications. Subserosal fibroids may be confused with adnexal masses; however, demonstrating the vascular bridging sign or vascular pedicle between the uterus and peri-uterine mass can help distinguish an ovarian mass from pedunculated myomas. Special stains and immunohistochemical markers may be utilized for further classification.

The incidence of collision tumors in the ovary is relatively rare, accounting for a small percentage of ovarian neoplasms. However, when they do occur, they present unique diagnostic and management challenges due to the presence of two or more distinct tumor types within the same tissue. Struma ovarii is challenging to diagnose before surgery, although it may present with hyperthyroidism in approximately 5% of cases [9].

Various types of collision tumors have been reported in the ovary, each characterized by the coexistence of histologically distinct tumor components. Some common types include:

Teratoma with Carcinoma: This is one of the most well-described types of collision tumors in the ovary. It involves the coexistence of a mature teratoma (dermoid cyst) with a malignant component, typically a carcinoma such as squamous cell carcinoma or adenocarcinoma.

Teratoma with Sarcoma: In this type of collision tumor, a mature teratoma is accompanied by a sarcomatous component, which may include various types of sarcomas such as leiomyosarcoma or rhabdomyosarcoma.

Teratoma with Neuroectodermal Component: Collision tumors comprising a mature teratoma along with a neuroectodermal component, such as a glioma or neuroblastoma, have also been reported in the ovary.

Brenner Tumor with Carcinoma: Brenner tumors, which are typically benign epithelial tumors composed of transitional cell-like epithelium, may coexist with a malignant carcinoma component, such as serous carcinoma.

Serous Cystadenoma with Carcinoma: Collision tumors involving a benign serous cystadenoma along with a serous carcinoma component have been reported, although they are relatively rare.

Mucinous Cystadenoma with Carcinoma: Similarly, mucinous cystadenomas may be associated with mucinous carcinomas in collision tumors of the ovary.

Other Rare Combinations: Rare collision tumor combinations involving various other tumor types, including granulosa cell tumor with mucinous cystadenoma, clear cell carcinoma with endometrioid carcinoma, and others, have also been reported sporadically in the literature.

Conclusion

Our case represents a rare presentation of benign struma ovarii accompanied by thecoma. Struma ovarii, also known as ovarian goiter, is characterized by ovarian tissue consisting predominantly of thyroid tissue (>50%). It is classified as a teratoma where thyroid tissue makes up more than 50% of the neoplastic tissue and can be either benign or malignant. The coexistence of mature teratoma and thecoma is uncommon. In this report, we present a patient with both mature teratoma and thecoma in the same ovary.

Struma ovarii, a rare ovarian tumor containing thyroid tissue often accompanied by thecoma, presents variably with symptoms such as ovarian enlargement, abdominal discomfort, or hormonal irregularities. Thyroid tissue in the ovary can induce

hyperthyroidism, necessitating vigilant monitoring. While imaging aids in diagnosis, histopathological confirmation is essential and may be supported by preoperative biopsy. Treatment typically involves oophorectomy, with the surgical extent determined by tumor characteristics and fertility considerations. Although prognosis is generally benign, malignant transformation or recurrence, particularly in aggressive cases, warrants long-term surveillance.

Fertility preservation may be achieved through conservative surgery, tailored to tumor features and patient preferences. Overall, while struma ovarii with thecoma is a rare entity, its clinical significance lies in the potential for thyroid hormone production, the need for accurate diagnosis and appropriate surgical management, and considerations for long-term monitoring and follow-up.

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Competing Interest: None Declared

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