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Histopathology

UNVEILING STRUMA OVARII: A CASE REPORT OF COEXISTING OVARIAN CYST AND THYROID TISSUE

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ABSTRACT It is true that struma ovarii is an uncommon kind of ovarian teratoma, a tumor that usually consists of many tissues. The main characteristic of struma ovarii is that it is primarily made of mature thyroid tissue. The terms "ovarii" and "struma" denote the ovarian origin of the thyroid tissue, respectively. We describe the case of a 42-year-old woman whose main complaint was progressively worsening stomach pain for a year. A multiloculated cystic lesion in the right ovary, suggestive of a dermoid cystic teratoma, was seen on the radiological scans to be aware of the potential consequences, such as malignant changes, that can arise from this kind of tumor.

KEYWORDS : Struma ovarii, Monodermal ovarian teratoma, Germ cell tumors

INTRODUCTION:

In fact, ovarian teratomas with struma ovarii are a particular subtype in which thyroid tissue makes up about 50% of the tumor's components. The tumor is identified as a monodermal ovarian teratoma due to its predominant presence of a single tissue type—thyroid tissue in this instance. The histological characteristic in question distinguishes struma ovarii from other forms of ovarian teratomas.[1]

Boettlin published the first description of this tumor in 1889. It makes up 2.7% of all dermoid tumors and 1% of all ovarian tumors [1]. Only 5% of it transforms malignantly; the majority is benign. Due to the lack of specificity in the symptoms, it is frequent to misdiagnose them as other ovarian lesions [2]. It frequently manifests as vague symptoms. When struma ovarii is discovered by accident, a histological analysis provides conclusive evidence. [3]

The gold standard for treating cancer has been agreed upon as being surgical tumor removal plus adjuvant radioiodine therapy to prevent disease spread or recurrence.[2] Here, we go over a case of struma ovarii that was identified and treated effectively.

CASE REPORT

The Department of Obstetrics at MGM Medical College and Hospital received a visit from a 42-year-old woman who was experiencing abdominal pain for the past year. The pain started off as occasional but has been getting worse over time. The patient has no notable medical history, does not take any medications, and has no relevant family history.

Menstrual History:

The patient reported a transition in menstrual patterns. Initially, she had a regular 28-day menstrual cycle with moderate flow and associated pain. Subsequently, her menstrual cycles became irregular, lasting 6-7 months, accompanied by dysmenorrhea and passage of blood clots.

The Ultrasonography (Abdomen and Pelvis) results showed a multiloculated cystic lesion in the right ovary measuring 13 x 12 x 11.6 cm. Additionally, there were solid areas measuring 3.2 x 3 x 3.1 cm and calcified areas measuring 2 x 1.3 x 1.2 cm, indicating the presence of a Dermoid Cyst Teratoma. No enlarged pelvic lymph nodes were observed.

On Gross examination, the right ovary was grey-white, enlarged, and glistening. On cut surface, it was multiloculated having solid and cystic areas comprising of yellow to reddish-brown, waxy cut surface resembling normal thyroid [Figure 1]. Upon histopathological examination, the ovarian tissue displayed a range of micro-follicles and macro-follicles, as depicted in [Figure 2-3]. These follicles were lined by cuboidal to flattened epithelium [Figure 4], and exhibited clear or oxyphilic cytoplasm. The nuclei appeared uniform, hyperchromatic, and located towards the base, with no observed mitotic activity. The thyroid follicles are filled with eosinophilic colloid and are enclosed in scant collagenous stroma with focal areas of hemorrhage.

Figure 1: The gross examination showed an enlarged, grey-white right ovary with glistening surface.

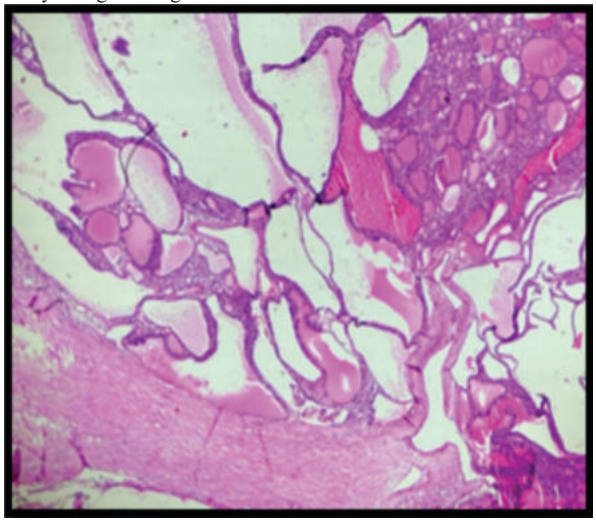

Figure 2: Thyroid follicles interspersed within ovarian cyst wall (H&E 4 x)

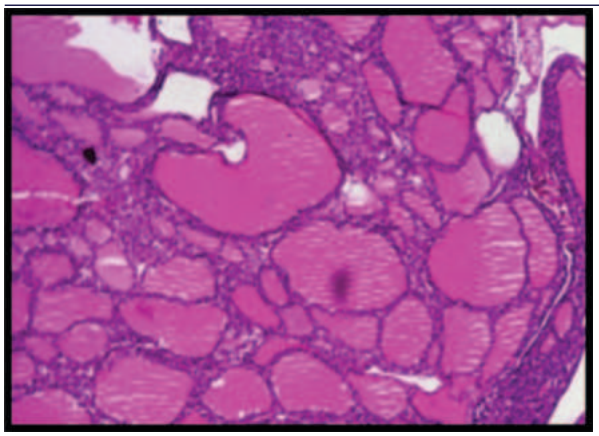

Figure 3: Macro-follicles as well as micro-follicles lined by cuboidal to flat cells filled with eosinophilic colloid. (H&E 10x)

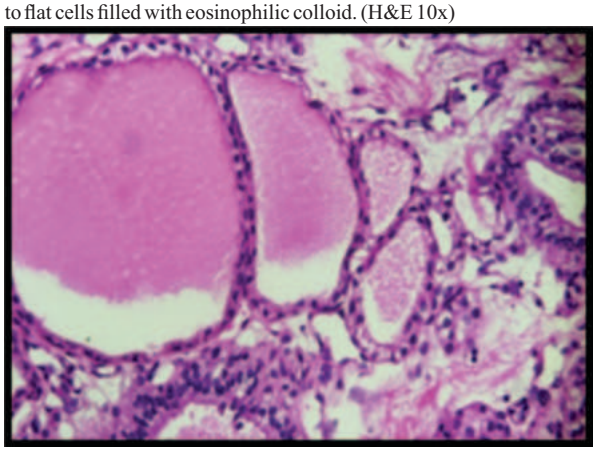

Figure 4: Colloid-filled thyroid follicles lined by flattened to cuboidal epithelium with no nuclear atypia (H&E 40x)

DISCUSSION

Struma ovary was first described in 1889 by Boettlin, followed by Ludwig Pick who suggested these are the ovarian goiters. In 1933, Plaut showed that the thyroid tissue in struma ovary is morphologically, pharmacologically, and biochemically identical to that of the thyroid gland [5]with Struma ovarii (SO) being a rare variant of ovarian teratoma composed mainly of mature thyroid tissue being benign in histology.[4]

The mature cystic teratoma is the most frequently encountered germ cell tumor, consisting of tissue from all three germ cell layers. On the other hand, struma ovarii, a monodermal teratoma, is predominantly made up of thyroid tissue, accounting for more than 50% of its composition.[9]

In the latest world health organisation classification, struma ovary and malignant thyroid tumors arising within the struma are included in the thyroid tumor group under the heading mono dermal teratoma and somatic-type tumors associated with dermoid cysts. [5]

Struma ovarii occurs at a higher age than common mature teratomas. [9] 1. Struma ovarii does not show a racial preference epidemiologically, however, it is frequently seen in individuals aged 40 to 60 years and rarely before puberty. Clinical symptoms include abdominal pain, palpable mass, abnormal vaginal bleeding, ascites, or pseudo-Meigs syndrome with hydrothorax.[2]

Preoperative diagnosis of this condition is challenging. 1. Ultrasonography can reveal the presence of a distinct solid tissue called a "struma pearl," which has a smooth margin and shows vascularity on the Doppler study. In computed tomography scans, an intracystic lesion in the ovaries appears highly attenuated on precontrast scans, and the absence or moderate enhancement of the cyst wall suggests the presence of a gelatinous colloid material. Magnetic resonance imaging typically shows multiple solid areas within the cysts, representing thyroid tissue, which appear as low-signal intensity on T2-weighted images and intermediate signal intensity on T1-weighted images.[8]

Histologically, struma ovarii usually shows normal thyroid follicles of varying sizes but occasionally there can be adenomatous nodule or even thyroid carcinoma.[9] 1. By analyzing the expression of thyroid markers TTF1, thyroglobulin, and T3, we were able to investigate the role of each histological pattern. Interestingly, both histological patterns showed expression of these molecules, indicating that the de-differentiated tissue might have developed mature thyroid function. [6] In literature, 5% to 8% of cases with struma ovarii have features of thyroid hyperfunction which was not seen in our study. [7]

The management involves surgical intervention and the use of radioactive iodine (I131) and other medications for treating thyroid cancer, along with radiation therapy. Struma ovarii can lead to extra ovarian extension due to tumor rupture or local spread, resulting in tumor deposits in the peritoneal cavity consisting of mature thyroid tissue. This condition is benign and referred to as benign strumosis. [5]

CONCLUSION

Healthcare providers need to consider struma ovarii as a possible diagnosis when encountering ovarian masses, especially in cases where there are unusual or complex clinical presentations. Surgical removal of the tumor followed by histopathological examination remains the gold standard for diagnosis.[8] To improve our understanding of struma ovarii, adopting precise terminology applicable to the thyroid gland is crucial. This includes using terms and classifications commonly employed in thyroid pathology.

Standardized reporting and clear documentation of histological findings will facilitate communication among pathologists and clinicians, leading to more consistent diagnoses and better patient management. [5] Healthcare professionals must maintain a comprehensive range of potential diagnoses in mind, particularly when dealing with single pelvic masses and abdominal pain, due to the potential for misdiagnosis and its impact on patient's quality of life. It is advisable to include struma ovarii as a possible diagnosis, especially in women between their second and third decades of life, as well as older women.[10]

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