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## Ovarian teratomas: Struma ovarii

*Struma ovarii belongs to the group of monodermic and highly specific teratomas. It comprises less than 5% of mature teratomas. Our retrospective study covers the period from 1991 to 2000 during which two patients with the diagnosis of struma ovarii were reported in the Institute of Oncology Sremska Kamenica. Both patients had unilateral adnexal mass followed by ascites in one case. In both patients thyroid hormonal status was in normal range before and after the operation. Total hysterectomy with bilateral oophoro-salpingectomy and total omentectomy were performed. Histopathological examination confirmed struma ovarii, with follicular, fetal and embryonic forms of thyroid tissue, without metastases and malignancy. Struma ovarii is an uncommon type of teratomas, difficult to identify without histopathological examination. Surgery is the only treatment because malignant alteration is possible*

**KEY WORDS:** *Struma ovarii; Ovarian Neoplasms*

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### INTRODUCTION

**S**truma ovary is a teratoma in which thyroid tissue is present exclusively or predominantly. It belongs to the group of monodermic and highly specialized teratomas (1-3). It is generally considered to account for less than 5% of mature teratomas (4,5). The age of patients ranges from 6 to 74 years and the majority of them have been encountered with this diseases during the reproductive years (6). Most cases of struma ovarii are benign and usually unilateral.

Struma ovarii could be hormonally active and manifest clinical symptoms of thyroid hyperactivity or thyrotoxicosis. Postoperative complications in hormonal active struma ovarii were reported as well (7,8). Struma ovarii may be associated with ascites and pleural effusion, known as "pseudo - Meigs syndrome" (9). In the majority of reported cases tumor excision led to complete remission. Malignant changes in struma ovarii are uncommon. In the number of reported cases diagnosis was based on the histology of the tumor and there were no metastases or other features of malignancy. Preoperative diagnosis is very difficult because ultrasonography (US), computer tomography

(CT) and nuclear magnet resonance (NMR) are not specific enough. With these techniques we can only see adnexal mass consisting of solid and cystic parts (10-12). Only preoperative scintigraphy with iodine (<sup>131</sup>I) could show active thyroid tissue in small pelvis.

### MATERIAL AND METHODS

In our retrospective study from 1991 to 2000 two patients were operated with the diagnosis of struma ovarii in the Institute of Oncology Sremska Kamenica. Histopathological analysis was carried out on routinely prepared tissue samples.

### CASE REPORT

The first patient was 64-year-old woman treated at the Institute in 1991, due to right cystic adnexal mass and ascites. Family and personal anamnestic data were with no pathological medical findings. Gynecological anamnesis: menarche at the age of 15, menstrual cycles regular, last menstruation at the age of 50. Parturition: 2 and abortion: 0.

Abdominal wall tension and increased abdominal volume were the main clinical symptoms. Karnofsky score was 80. Gynecological examination showed no pathological findings in vulva and vagina. Uterus and ovaries were difficult to determine because of tumor's cystic form positioned 3 cm under the umbilicus. Laboratory blood analyses were in normal range, as well as thyroid hormones: thyroxin (T4), triiodothyronine (T3), thyroid-stimulating hormone (TSH).

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Radiography of the thorax was without pathological findings. Ultrasonography showed small uterus with empty cavum. Tumoral mass was found in minor pelvis, with 5 to 7 cystic zones separated with thick septa filled with dense liquid. Ascites was also observed. Patient was operated on August 26, 1991. Five liters of yellow ascites was found during laparotomy. Right ovary was polycystic, 13x15 cm in size. Left ovary was without macroscopic pathological findings. Total hysterectomy with bilateral oophoro-salpingectomy and total omentectomy were performed. Histopathological analysis revealed struma ovarii, without metastases and malignancy. No ovarian tissue was found. Thyroid tissue made follicular forms with colloid. In some parts of the struma ovarii fetal follicular thyroid forms were found (Figures 1,2).

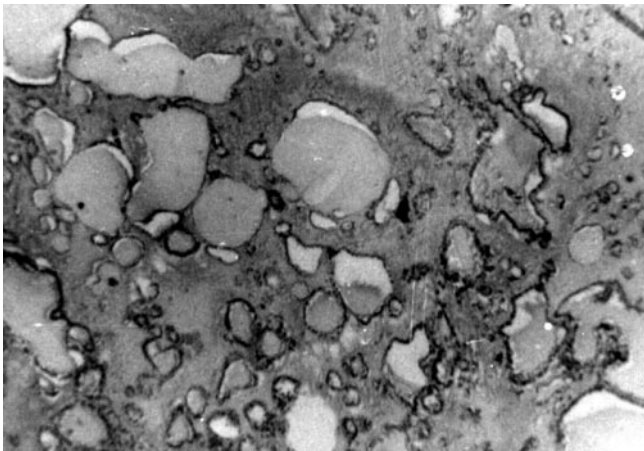


Figure 1. Struma ovarii (HE 4x10)

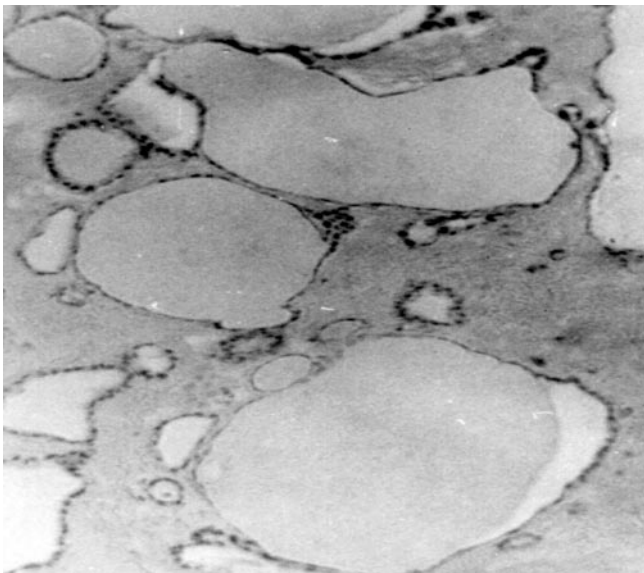


Figure 2. Thyroid tissue made follicular form with colloid in ovary (HE 10x 10)

Omentum was free of metastases. Postoperative course and the level of thyroid hormones were in normal range.

The second patient was a 52-year-old woman treated in the Institute of Oncology Sremska Kamenica in 1996 due to right adnexal mass. Family and personal anamnestic data were with-

out any pathological medical findings except allergy to penicillin. Gynecological anamnesis: menarche at the age of 16, menstrual cycles regular, menopause at the age of 51, parturition: 3, abortion: 1 (artificial). She was treated for Basedow's disease few years ago.

Main clinical symptoms were increased abdominal volume, pressure on urinary bladder and frequent urination. Karnofsky score was 80. Gynecological examination showed no pathological findings in vulva, vagina and uterus. Right adnexal mass showed smooth surface, 10 x 8 cm in size. Left ovary was without pathological findings. Laboratory blood analyses including thyroid hormones were in normal range. Radiography of the thorax was without pathological findings. Ultrasonography showed normal uterus. In right lower half of the abdomen solid tumor with central cystic form was found, clearly limited from other organs with thick capsule. Cystic cavum was 5 cm in diameter and tumor size was 15x12 cm.

Patient was operated on July 25, 1996. Total hysterectomy with bilateral oophoro-salpingectomy and total omentectomy were performed. Intraoperative finding correlated with ultrasonography. Histopathological analysis showed struma ovarii, with follicular, fetal and embryonic forms of thyroid tissue, without metastasis and malignancy (Figure 3). Metastases were not found in the omentum.

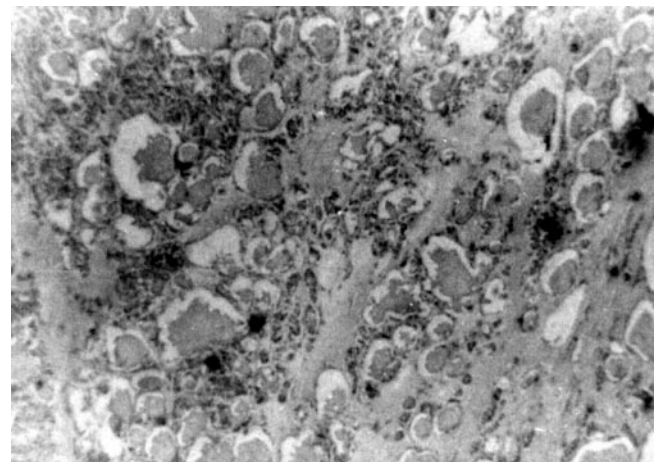


Figure 3. Struma ovarii with follicular, fetal and embryonic forms of thyroid tissue (HE x10)

Postoperative course and the level of thyroid hormones were in normal range. The follow-up period three years after the operation was also normal.

## DISCUSSION

The frequency of the occurrence of thyroid tissue in dermoid ovarian cysts, according to Blaustein, ranges from 5 to 20 %. Most cases of struma ovarii are benign and usually unilateral.

Struma ovarii in our patients was benign and unilateral (right ovary). One patient had ascites that is also common. No malignant cells or any other signs of malignancy were found in ascites after pathohistological and cytological examination. Thyroid hormonal status was physiological. Struma ovarii can be hormonal active (7,8) with ascites and hydrothorax (9).

Grandet reported a case of hyperthyroid disease after total thyroidectomy with active thyroid tissue in struma ovarii (13).

One of our patients was treated for Basedow's disease few years ago but during the examination thyroid hormonal status was normal both before and after operation. Whether thyroid tissue in ovary was active or suppressed by therapy is controversial issue.. Both patients were in menopause.

Preoperative diagnosis is very difficult due to different types of teratomas with similar findings. The ultrasonography features of struma ovarii are also nonspecific, but a heterogeneous, predominantly solid mass may be seen. It is difficult to distinguish between struma ovarii and dermoid cysts on the basis of their sonographic appearance. Nevertheless, Doppler flow may aid in the preoperative diagnosis of struma ovarii. Blood flow signals, detected from the center of the echoic lesion, and low resistance to flow may be more common in struma ovarii. On T1- and T2-weighted images, the cystic spaces demonstrate both high and low signal intensities. The use of US, CT and MR imaging features of ovarian teratomas can aid in differentiation and diagnosis (10-12,14). Kim et al. showed that struma ovarii has some characteristic MR appearance of a multilobulated complex mass with thickened septa, multiple cysts of variable signal intensities, and enhancing solid components (15).

Only preoperative scintigraphy with radioactive iodine (<sup>131</sup>I) of minor pelvis could show active thyroid tissue (16). Histopathological examination can give the final proof; microscopic examination may only reveal a few typical thyroid follicles, resulting in confusion with other cystic ovarian tumors. Extensive sampling should be undertaken and immunohistochemistry may be decisive in establishing the thyroid nature of the epithelial lining (4). Surgical management is the first choice in struma ovarii treatment to prevent malignant alteration of this monodermic and highly specific teratoma (17-19).

## CONCLUSION

Benign and unilateral struma ovarii were diagnosed in two patients treated in the Institute of Oncology Sremska Kamenica during the period from 1991 to 2000. Thyroid hormonal status was in normal range before and after operation in both patients. Both patients were well after the operation and in 3-year long follow-up period.

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