

Case Report

Successful laparoscopic tumorectomy of struma ovarii diagnosed preoperatively

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Summary

Introduction: Struma ovarii is rare ovarian tumor. Almost 95% of it is indicated as the benign tumor. Therefore, it is important to be diagnosed preoperatively. A case that is diagnosed successfully as a struma ovarii preoperatively, is presented. **Case Report:** A 36-year-old Japanese woman G1P1, with no family history nor past history, was referred to this hospital for the treatment of an ovarian tumor, because followed up ovarian tumor gradually became enlarged. Regarding the patient's laboratory data, no tumor marker was elevated. Thyroid function was within normal range. Ultrasound study demonstrated that the tumor was a multilocular mass with solid part. Pelvic MRI indicated stained glass appearance. Although there was a possibility of mucinous malignant tumor as a differential diagnosis, the authors mainly diagnosed it preoperatively as a struma ovarii. Laparoscopic right ovarian tumorectomy was performed and the histological examination revealed as a struma ovarii without malignancy. **Conclusions:** When the ovarian tumor presents a stainedglass appearance, it is important to diagnose carefully keeping struma ovarii in mind as a differential diagnosis.

Key words: Struma ovarii; Laparoscopic operation; Preoperative diagnosis; Magnetic resonance imaging.

Introduction

Although struma ovarii is rare ovarian tumor, almost 95% of it is indicated as the benign tumor [1]. Therefore, it is important to be diagnosed preoperatively. A case that was successfully diagnosed preoperatively as a struma ovarii is presented.

Case Report

A 36-year-old Japanese woman (gravida 1, para 1), with no family history nor past history, was referred to Rokko Island Konan Hospital for the operation of an ovarian tumor, because followed up gradually became enlarged up to 6 cm in diameter.

On her visit, the patient had no complaint, however, abdominal ultrasound examination demonstrated that her right ovary was enlarged (Figure 1). Several cysts were seen beside the solid part in the ovarian mass. Laboratory data showed that the tumor marker and thyroid function were within normal range (Table1).

Further preoperative study was performed using pelvic enhanced MRI (Figure 2). It demonstrated that the right ovarian well-defined multilocular cystic tumor with several parts showed various intensities on T1-weighted image (T1WI) (Figure 2A) and T2-weighted image (T2WI) (Figure 2B). This finding was observed as stained glass appearance. Many cystic regions showed low intensity on T1WI and prominent high intensity on T2WI. Solid part of the tumor showed high intensity on T1WI and prominent low intensity on T2WI. With Gd-enhanced T1WI image, solid part and the thickened septi of the tumor was rapidly and strongly enhanced (Figure 2C). Based on these MRI findings, the preoperative diagnosis of struma ovarii was made.

Laparoscopic right ovarian tumorectomy was performed. As the operation findings, a small amount of ascites was observed. Right ovary was observed as large as 6 cm in diameter and adhered to retroperitoneum (Figures 3 and 4). The operation time was two hours and three minutes and the blood loss was 5 grams. Postoperative histological examination revealed as a struma ovarii without malignancy (Figure 5). As the postoperative course of the patient went well and she was discharged from the hospital five days after the operation. Written informed consent was obtained from the patient.



Figure 1. — Transvaginal ultrasound examination of the case: several cysts can be seen beside the solid part in the ovarian mass.

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Table 1. — Laboratory data of the patient's first visit.

CEA	1.2 ng/ml	TSH	1.144 μ U/ml
SCC	0.8 ng/ml	Free T3	2.75 pg/ml
CA-125	16.0 U/ml	Free T4	1.03 ng/ml
CA19-9	21.1 U/ml		

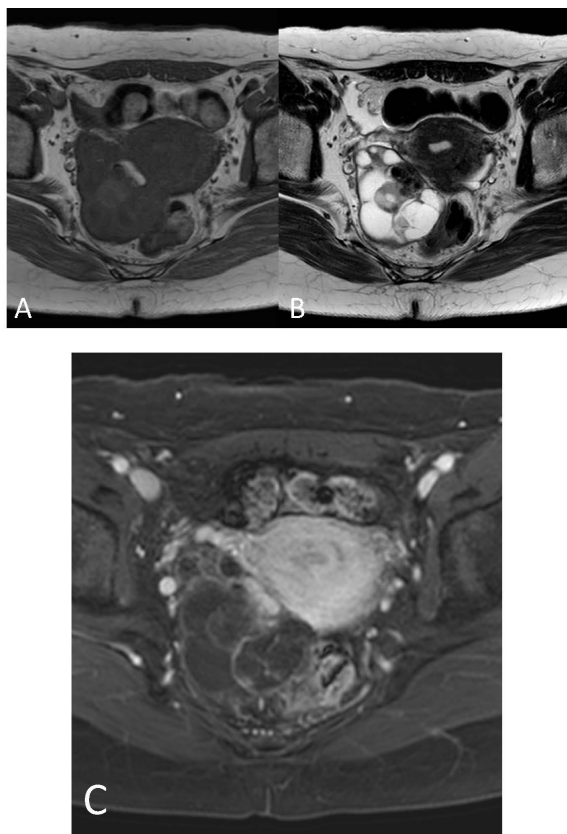


Figure 2. — Pelvic MRI of the case. A) T1WI. B) T2WI. C) Gd-Enhanced T1WI: pelvic MRI demonstrates the multilobular cystic tumor with stained glass appearance. The solid part and thickened septi of the tumor show low intensity on T2WI which is rapidly and strongly enhanced.

Discussion

Struma ovarii, a rare ovarian tumor, is approximately 0.5-1% of overall ovarian tumor and 4% of germ cell tumor [2]. It is classified if the thyroid tissue is comprised with more than 50% of its overall tissue [3]. Histologically it is mostly a benign tumor, however thyroid cancer is found in 0.3-10% of struma ovarii [2-5].

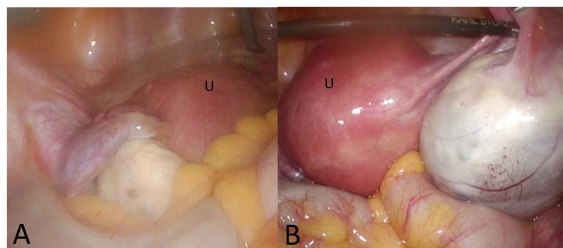


Figure 3. — Laparoscopic findings: a small amount of ascites is observed. Right ovary is as large as 6 cm and adheres to retroperitoneum. A) Uterus (U) and left ovary. B) Uterus (U) and right ovary.



Figure 4. — Resected right ovarian tumor.

For preoperative diagnosis, no tumor marker is useful to diagnose struma ovarii. Although some reports indicate cases with high CA125 levels, this finding is shown less frequently [6]. In this presented case, no elevation of CA125 was shown. Clinical and biochemical features of hyperthyroidism are uncommon in cases with struma ovarii. Only 5-8% of struma ovarii is pointed to present hyperthyroidism [1, 2, 7, 8]. In this case thyroid function was within normal range.

As a preoperative diagnosis, with ultrasound examination, struma ovarii often shows a solid component inside the mass. Several cysts exist beside the solid part [9]. Therefore, only with ultrasound examination, the finding of struma ovarii is just similar to that of ovarian cancer, and quite difficult to diagnose in these tumors. Thus, MRI is likely to be used for further diagnostic imaging. Pelvic MRI of ovarian struma ovarii often demonstrates also multilocular masses with solid component. Some of the multiple cysts show various intensities on T1WI and T2WI. It is referred to as a stained glass appearance. The solid part showing high intensity on T1WI and low intensity on T2WI

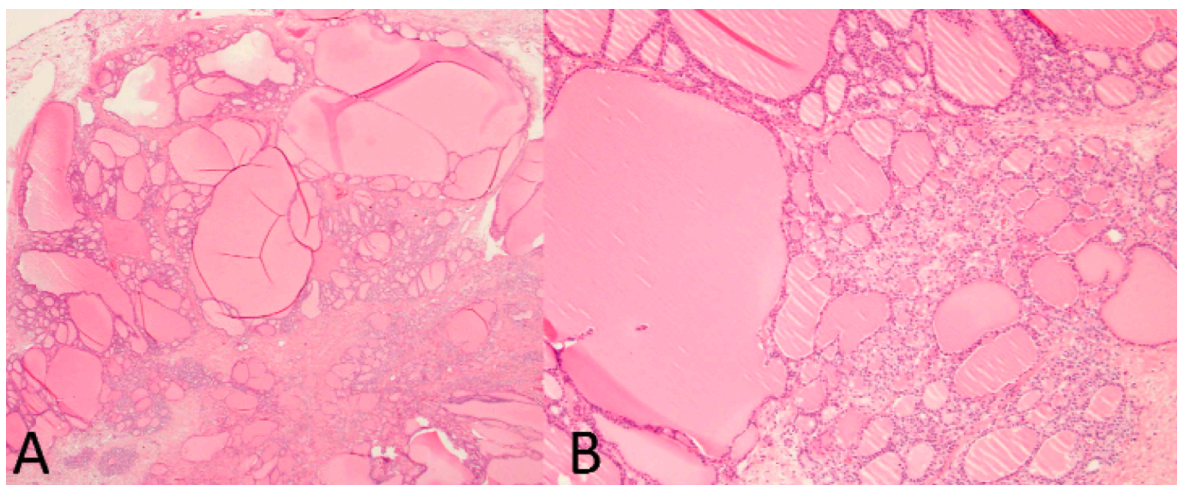


Figure 5. — Histological examination revealed as a struma ovarii without malignancy. A) Low magnification. B) High magnification.

often has much volume and shows hypervascularity from early phase of enhancement with Gd-enhanced MRI study, reflecting thyroid tissue [10]. These MRI findings of struma ovarii are still similar to those of ovarian cancer. Struma ovarii is usually diagnosed preoperatively by expert radiologist using pelvic MRI. The main clinical points are whether the mass shows a lobulated multilobular cystic tumor with typical stained-glass appearance, the presence of solid part that shows high intensity on T1WI, and prominent low intensity on T2WI, and rapid and strong enhancement of solid part and thickened septi. In this case, the tumor was diagnosed as struma ovarii based on these findings.

Once tumor is diagnosed histologically as a struma ovarii without malignancy, tumorectomy is usually sufficient treatment. In this case, histological examination showed struma ovarii without malignancy.

Conclusions

Although most of struma ovarii are benign tumors, sometimes it is difficult to diagnose preoperatively. When the ovarian tumor with stained glass appearance is encountered with imaging, it is important to diagnose carefully keeping struma ovarii in mind as a differential diagnosis.

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