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Struma ovarii - A report of seven cases

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OBJECTIVE(S): To study the histomorphological features of struma ovarii.

METHOD(S): Seven cases of struma ovarii were retrieved from the archives of the department and the slides of these ovarian tumors were reviewed.

RESULTS: Out of the seven cases of struma ovarii six were benign and one was malignant.

CONCLUSION(S): The thyroid tissue in a teratoma may show pathological changes as seen in normally placed thyroid including diffuse or nodular hyperplasia, thyroiditis, carcinoma and malignant lymphoma. Therefore, a careful histopathological examination of these cases is necessary.

Key words : dermoid cyst, struma ovarii, teratoma

Introduction

Struma ovarii is a rare ovarian teratoid tumor. Thyroid elements can be noted in almost 20% of the cases of dermoid cyst, however the term 'struma' is used when the thyorid tissue constitutes more than 50% of the tumor [1]. The malignant struma ovarii is even more rare, and makes about 5% of all cases of struma ovarii [2,3]. Majority of the references are in the form of case reports in the literature. We present a report of seven cases of struma ovarii, which include six cases of benign struma ovarii and one case of malignant struma ovarii.

Methods

These cases were retrieved from the archives of our department over a period of about 5 years (July 1999- May 2004). Hematoxylin and eosin (H&E) stained slides of the ovarian tumors were reviewed in all these cases and their morphologic features were correlated with clinical presentation.

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Results

The patient's age range varied from 19 to 54 years. The chief complaints were abdominal distension in three patients and abdominal pain in one patient. One patient was being investigated for infertility and was found to have an adnexal mass on pelvic ultrasound examination. One patient had an associated malignant tumor of endometrium (adenocarcinoma). One patient had an incidental leiomyoma of the uterus. Three patients underwent total abdominal hysterectomy with bilateral salpingo-oophorectomy (TAHBSO) while three patients underwent unilateral salpingo-oophorectomy and one patient had bilateral salpingo-oophorectomy without hysterectomy.

Gross pathology

The size of the tumors varied from 3.5-12 cm in the greatest dimension. Outer surface was smooth and glistening except in one case, which showed irregular surface with modularity. In one case, a peripheral rim of capsule was also noted. Cut surface was predominantly cystic comprising of multiple cystic spaces with intervening septa measuring 0.5-3 cm. Three of the cases had other features of mature cystic teratoma like hair, tooth etc. No papillary excrescences were seen in the luminal aspect in any of the tumors. Focal solid areas were also noted, which were red brown in colour with a "beefy" appearance.

Microscopic features

Six of the seven cases revealed benign thyroid elements comprising of multiple follicles of varying sizes filled by amorphous eosinophilic material. The follicles were lined by flattened to cuboidal epithelial cells with scanty to moderate amount of cytoplasm (Figure 1). Other elements of mature cystic teratoma were noted in three of these cases. Compressed ovarian stroma was noted at the periphery in three cases. One case had changes of multinodular goiter within thyroid tissue characterized by dilated follicles filled by amorphous eosinophilic material. One of the cases showed a tumor composed of sheets of microfollicles lined by cells having mild nuclear atypia and scanty to moderate amount of cytoplasm. There was focal capsular infiltration but no vascular invasion. Based on these findings, a diagnosis of minimally invasive follicular carcinoma (malignant struma ovarii) was made.

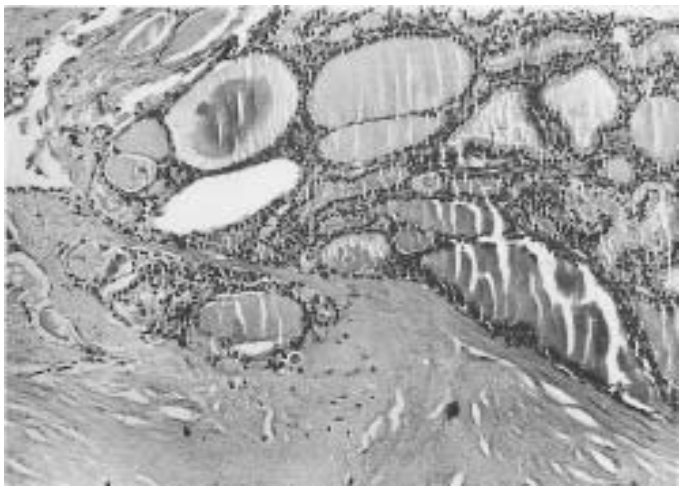

Figure 1: Microphotograph showing multiple variable sized thyroid follicles filled by amorphous eosinophillic material seen in one case of struma ovarii (Hematoxylin and Ecosin, X250).

Discussion

Mature cystic teratomas make up almost 20% of all ovarian neoplasms. Struma ovarii was described by von Kalden in 1895, Gottschalk in 1899, and Meyer in 1903 [4,5]. Preoperative diagnosis is difficult, because this rare tumor has no differentiating signs or symptoms. Occasionally, preoperative scintigraphy of the pelvis may be helpful [6]. None of our cases could be diagnosed as struma ovarii, however a diagnosis of benign dermoid cyst was considered preoperatively. The cases described here differed in some important aspects with respect to the cases reported in the literature [1,7]. Two of the patients reported in this series were younger than the usual age of 51-60 years of the majority of the patients. In one of these two patients, a conservative surgery was performed as she was desirous of preserving her fertility.

The thyroid tissue in struma ovarii may show pathological changes just like those that can occur in normally placed thyroid including diffuse or nodular hyperplasia, thyroiditis, carcinoma and malignant lymphoma. Criteria of malignancy such as microscopic cellularity, cellular pleomorphism and mitotic activity [8] are accepted universally. Pardo-Mixdam and Vazquez [9] have emphasized that the malignant tumor must show capsular and/or vascular invasion or metastasis or both and the morphology of the tumor must resemble the follicular or papillary type. However others give more preference to the histological criteria [10]. One of our cases showed focal invasion of the capsule by the tumor cells and fulfilled the criteria for malignancy. This case was diagnosed as minimally invasive follicular carcinoma. Only 5%-6% of patients with malignant struma ovarii develop distant metastases, mostly in the abdominal cavity and rarely in the bones, liver, lungs and brain [8,11]. No regional or distant metastasis was noted in the index case.

To conclude, malignancy can occur occasionally in strum ovarii, which is a relatively uncommon neoplasm. The preoperative diagnosis is difficult; hence the awareness of these entities is essential particularly in young patients, who wish to preserve their fertility.

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