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NON-INVASIVE PAPILLARY CARCINOMA VESICULAR VARIANT ON STRUMA OVARII

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ABSTRACT-
Struma ovarii is a mature teratoma, accounting for 0.5 to 1% of all ovarian tumors and defined by the presence of more than 50% thyroid tissue within the neoplasm. It may include the same lesions observed in the thyroid, including malignant transformation. Malignant degeneration of a struma ovarii is an extremely rare type of germ cell tumor, observed in 5 to 15% of ovarian teratomas.
We report a case of struma ovarii with malignant transformation observed in a 31-year-old woman.

Keywords – ovary, papillary carcinoma, *struma ovarii*, teratoma

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Introduction

Struma ovarii is a rare ovarian tumor, classified as a monodermal teratoma, consisting mainly (more than 50%) or entirely of thyroid tissue [1]. It accounts for 0.5 to 1% of all ovarian tumors and 2 to 5% of ovarian teratomas [2]. Most cases of struma ovarii are benign [1]. Less than 5% undergo malignant transformation [3].

We report an unusual case of papillary carcinoma developing on struma ovarii. Through this case and a review of the literature, we will describe the epidemiological and histopathological features of this entity.

Observation

The patient was a 31-year-old woman with no significant medical history who presented with pelvic pain. The symptom had reportedly begun nine months earlier with pelvic pain and a feeling of heaviness. Physical examination revealed a soft abdomen that was tender to palpation. A vaginal examination revealed a mass in the right lateral pelvic region. The patient underwent an abdominal ultrasound, which revealed a cystic, heterogeneous mass on the right ovary. The left ovary was normal.

A right oophorectomy was performed. Macroscopic examination revealed that the ovary was firm, multilobed, without capsular rupture, with a smooth outer surface, without vegetation, measuring 8 x 6 x 4 cm. On cut, the sections showed multiple cystic cavities, ranging from 0.4 to 3.6 cm in diameter, with gelatinous or colloidal contents.

On histological examination, the ovarian parenchyma was delimited by a thin capsule, composed of more than 70% thyroid tissue, consisting of thyroid vesicles of varying sizes, centered by colloid. They were bordered by thyrocytes presenting focal papillary-type nuclear atypia, with enlarged, ground-glass appearance of the nuclei. No papillary architecture, vascular emboli, or capsule breach was observed. The rest of the parenchyma was composed of mature, non-atypical structures made up of skin tissue with appendages and adipose tissue. The diagnosis was non-invasive papillary carcinoma, vesicular variant on struma ovarii.

The staging did not reveal any other secondary sites and the thyroid appeared normal without nodules.

After one year of follow-up without adjuvant treatment, the patient was doing well and no tumor recurrence was detected.

Discussion

Struma ovarii, formerly known as "ovarian goiter" is a rare benign condition. Ludwig Pick [4] first observed in 1901 that this tumor was composed predominantly of thyroid tissue and it was a monodermal teratoma [5].

Teratomas account for 15 to 20% of ovarian tumors [6]. The majority of germ cell tumors are mature teratomas, 15% of which contain thyroid tissue corresponding to struma ovarii, and the rate of malignant transformation is extremely low, less than 5% [7, 8]. The Barr body is involved in the parthenogenetic development of this pathology [8], which is associated with a mutation in the BRAF and KRAS genes, identical to that observed in thyroid carcinoma [8, 9].

In this study, the patient was 31 years old at the time of diagnosis. According to the literature, the peak incidence of struma ovarii is observed in the fifth decade of life, although it can affect women of any age, most often between 21 and 77 years old. This has also been reported by other authors, such as Yi Zhu et al [7] and D M. Alvarez et al [5], who reported cases involving patients aged 43 and 21, respectively.

Clinically, struma ovarii, even when malignant, is initially asymptomatic and is rarely diagnosed preoperatively [7]. The patient in this study presented with pelvic pain and a sensitive lateral pelvic mass as the main symptom. According to the literature, 78% of cases presented with an abdominal mass, as reported by D M. Alvarez et al [5]. The case reported by these authors was a pregnant woman, whose pregnancy had masked the presence of the ovarian mass, which was discovered incidentally during a routine prenatal ultrasound [5]. Ascites was also reported in 17% of cases [10, 11]. In a case reported by J R Barrera et al, the patient complained of pain associated with a non-tender pelvic mass and vomiting [5].

Regarding laterality, approximately 94% of lesions are unilateral and seem to affect the left ovary more than the right ovary [10, 11]. In our patient, the tumor developed in the right ovary.

The imaging results for struma ovarii are not specific. Ultrasound may show a complex appearance with multiple cystic and solid areas and a multilobulated surface, reflecting the pathological appearance of the ovary and indicating its removal [5].

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On histological examination, for the present study, the ovary was entirely cystic, and the tumor measured 8 cm. J R Barrera et al [5] reported a case with a diameter of 12.5 cm. According to the literature, the size of tumors can vary between 3 and 20 cm [12], generally less than 10 cm [9]. On cut, the sections are solid, sometimes nodular, red to brown in color, resembling a normal thyroid or goiter. They may have cystic cavities or, rarely, be entirely cystic. A dermoid cyst may be observed [9]. On microscopic examination, the diagnosis of struma ovarii is made when thyroid tissue is the predominant element [6], it means that the ovarian teratoma is composed of more than 50% or entirely of thyroid tissue, with thyroid vesicles of various sizes [9, 13].

Cases with less than 50% thyroid tissue but with histological criteria for malignancy are also included in this category [13]. As there are no universally established criteria for diagnosing malignancy in struma ovarii, most authors have used the diagnostic criteria used for the thyroid gland [5]. The malignancy of struma ovarii is based solely on histomorphological features [10], which are identical to those of thyroid carcinoma: papillary-type nuclear atypia with overlapping, indented, and "ground-glass" nuclei, chromatin marginalization, papillary or vesicular architecture, specifying capsular invasion or vascular invasion for the latter. All variants of malignant thyroid tumors can be found in struma ovarii [7]. It can be classified histologically as papillary carcinoma (44%), follicular carcinoma (30%) or mixed (26%) [14]. Malignant degeneration most often corresponds to papillary carcinoma, follicular variant in 54% or classic variant in 21% [12].

In this case, thyroid tissue accounted for 70% of the ovarian tumor, presenting focal papillary nuclear atypia without visible papillary architecture, leading to a diagnosis of papillary carcinoma variant vesicular on struma ovarii. The absence of capsular and vascular invasion pointed to the non-invasive nature of the lesion with the morphological characteristics of a NIFT-P (non-invasive thyroid follicular tumor with papillary-like nuclear features) according to the WHO classification of thyroid tumors [15].

The main differential diagnosis is ovarian metastasis from a primary thyroid tumor. In the case of struma ovarii with malignant degeneration, the lesion is often unilateral, and the thyroid gland is non-tumoral [10], as was the case with our patient, ruling out the possibility of ovarian metastasis, which is bilateral in most cases [16].

Currently, there is no universal treatment for this pathological entity. Several authors have recommended that the criteria for diagnosis, treatment, and follow-up of thyroid-type carcinoma of the struma ovarii be similar to those for primary thyroid carcinoma [7, 14, 17]. For our patient, no adjuvant treatment was performed after right oophorectomy, and after one year of follow-up, no tumor recurrence was detected.

Conclusion

Struma ovarii is generally asymptomatic and rarely diagnosed preoperatively. Malignant degeneration is rare, and metastasis to the ovary from thyroid carcinoma must always be ruled out. Diagnosis is pathological, using the same morphological criteria as those used for the thyroid gland. The therapeutic decision should be made on a case-by-case basis, depending on clinical and histopathological parameters.

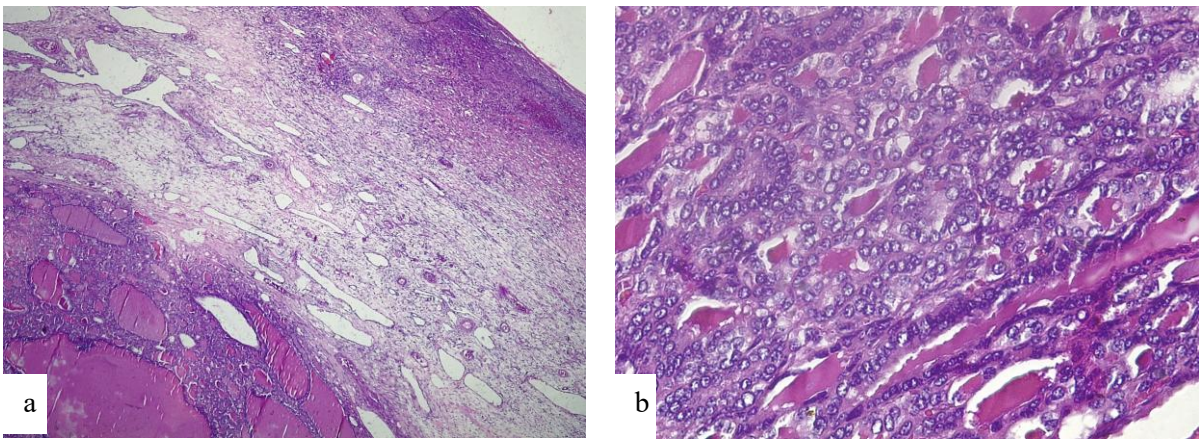

Figure 1: Ovary. Presence of thyroid tissue, consisting of thyroid vesicles of varying sizes with colloid and bordered by thyrocytes with focal papillary-type nuclear atypia. HE x40 (a) HE x400 (b).

Source: Department of Pathology, Joseph Ravoahangy Andrianavalona University Hospital, Antananarivo, Madagascar.

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