Ovarian capillary hemangioma and stromal luteinization: a case study with hormonal receptor evaluation

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Summary

Background: Ovarian hemangiomas are rare tumors, most of them asymptomatic, and of the cavernous type. Six of the reported cases were accompanied by stromal luteinization. There is a debate whether these luteinized cells promote the growth of the vascular lesion or just represent a stromal reaction.

Case: A 71-year-old female was incidentally found to have a small capillary hemangioma in her left ovary, surrounded by a rim of luteinized stromal cells. Immunohistochemical investigation revealed the presence of estrogen and progesterone receptors in the endothelial cells of the lesion.

Conclusion: Our histological and immunohistochemical findings, as well as data from the literature, support the view that at least some vascular lesions may result from hormonal stimulation.

Key words: Ovarian hemangioma; Stromal luteinization; Estrogen receptors; Progesterone receptors.

Introduction

Vascular tumors of the female genital tract, and especially those of the ovary, are extremely rare. Approximately 50 cases of ovarian hemangiomas have been reported in the literature [1-4]. In some patients ovarian hemangiomas occur together with diffuse abdominopelvic hemangiomatosis, while others represent isolated ovarian masses [5]. The former patients often have concomitant abdominal or pelvic symptoms, whereas the latter are usually asymptomatic. This article describes a 71-year-old woman with an asymptomatic ovarian hemangioma surrounded by stromal luteinization.

Case Report

A 71-year-old Caucasian woman was subjected to rectosigmoidectomy in our Institution for rectal cancer. During this operation both ovaries were also resected because the right one was bearing a cyst, while the left was very close to the rectal tumor and was excised for staging purposes. The patient did not have any symptoms from her genital tract (e.g. metrorrhagia) or any other endocrinological manifestations.

Pathologic Findings. For histological examination we delivered a segment of the left colon, 16 cm in length. One centimeter from the lower resection margin, the large intestine revealed ulcerated tumor with irregular borders, 4 cm in diameter. Ten lymph nodes, 0.3-1.2 cm in diameter were removed from the pericolonic fat tissue. In addition, for histological examination, proximal and distal intestinal rings, two lymph nodes from the root of the left mesenteric artery, and both uterine adnexae were analyzed. The left ovary measured 2.5x1.5x1.1 cm and in cross section showed a relatively circumscribed lesion, 0.8 cm in diameter, with an orange-colored peripheral rim and hemorrhagic central portion. These features macroscopically suggested a corpus luteum. The right ovary measured 4x3.5x2 cm and in cross section showed a cyst, 2.5 cm in diameter with a smooth internal surface and brownish lining.

Microscopically the intestinal tumor represented a well-differentiated colonic adenocarcinoma invading only the submucosa. Resection margins, as well as all examined lymph nodes, were free of tumor (according to AJCC: pT1, N0). In the left ovary we found that what looked like a corpus luteum was actually a benign vascular lesion. It consisted of masses of bland endothelial cells which frequently formed numerous capillary blood vessels (Figure 1). Cellular atypia or significant mitotic activity were not observed. Along the margin of this well-circumscribed capillary hemangioma there was a layer of luteinized cells which formed a capsule enclosing the lesion. The rest of the right ovary was atrophic. The left ovary displayed an endometriotic cyst which was partially lined by one layer of ciliated cuboidal cells with no atypia and partially by many layers of iron-laden macrophages. Small inclusion cysts and corpora albicanea were also observed in the left ovary.

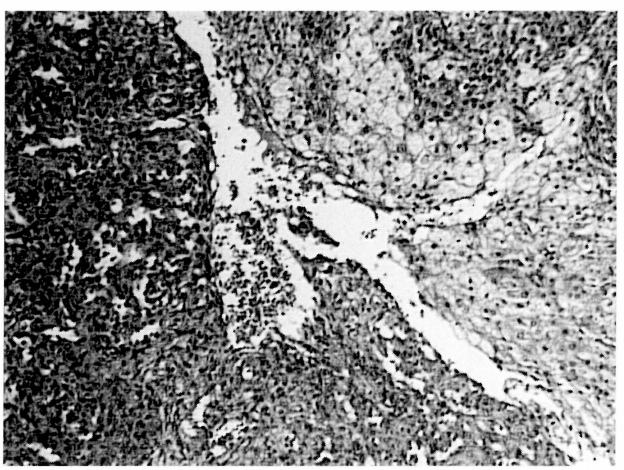

Figure 1. — Typical capillary hemangioma on the lower left side and prominent luteinization of the adjacent stroma on the upper right side. H&E x100.

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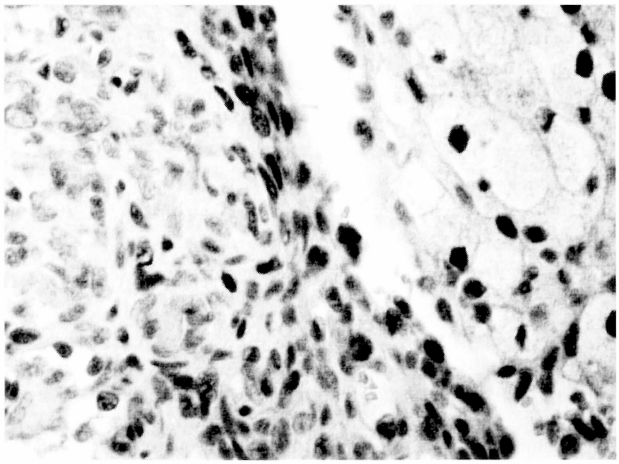

Figure 2. — Positive reaction to estrogen receptor antibody of the nuclei of the endothelial (left), and the luteinized cells (right). DAB x400.

Immunohistochemical investigation of the hemangioma for presence of hormonal receptors was performed using a streptavidin-biotin detection method («Unitect», Oncogene Research Products, Boston, U.S.A.) with high temperature pretreatment, and monoclonal antibodies against estrogen and progesterone receptors (both 1:80 dilution, Novocastra Laboratories Ltd., Newcastle upon Tyne, U.K.). The nuclei of the endothelial cells were moderately positive for both antibodies (Figure 2). The nuclei of the surrounding luteinized cells were also moderately positive. The ovarian stroma presented more intense reactions to both antibodies.

Discussion

Ovarian hemangiomas are rare tumors, mostly of the cavernous type [1-4]. More commonly they are small and remain asymptomatic until found incidentally. However, when they have large dimensions, they may give rise to symptoms as any large ovarian tumor. In addition, very few of the reported cases were accompanied by ascites [1, 3, 4]. Magnetic resonance imaging is very useful for the presurgical evaluation of these tumors.

Our case concerned a small hemangioma, which was an incidental pathological finding in an operation that was performed for rectal tumor excision. The interesting and particular characteristics of the case presented here are the type of hemangioma, which was capillary, and the presence of a rim of luteinized cells surrounding the lesion. The presence of these lutenized cells in a close and presumably causal relation with this benign vascular lesion, is for one more reason intriguing, because it was found in a postmenopausal woman. Six similar cases presenting a capillary hemangioma and luteinization of the ovarian stroma have been described in the literature [1-4]. Five also involved postmenopausal women. Furthermore, two of these tumors were very large, accompanied by ascites and elevated levels of CA-125 in the serum [3-4]. Ovarian pathology occurred together with a synchronous well-differentiated endometrial adenocarcinoma in another of these six cases [2], while one more case presented simultaneously mild complex endometrial hyperplasia [1]. Endometrial hyperplasia and adenocarcinoma in these particular cases may be related to hormonal stimulation by the ovarian luteinized cells, since luteinized cells produce androgens which may consecutively transform to estrogens in the adipose tissue. However, it should be noted that the patient with endometrial adenocarcinoma had bilateral diffuse stromal luteinization which is usually described as hyperthecosis, rather than unilateral, focal luteinization limited to the stroma surrounding the ovarian hemangioma, as in our case.

The main issue regarding these six cases, as well as ours, is if there is any causal relationship between these capillary ovarian hemangiomas and the luteinized stromal cells, which in some instances were found in close contact. One possible explanation is that these luteinized cells promote the growth of vascular lesions. The angiotropic effect of estrogens is well established. They may induce the growth of vascular neoplasms, as for example hepatic hemangioendotheliomas in women receiving oral contraceptives [6]. In addition, estrogens, while they are capable of promoting neo-vascularization in proliferating endometrium, may also have an antiproliferative effect on other vessels (such as coronary and carotid arteries), an inhibitory effect of great clinical importance in certain vasculopathies [7]. There is evidence that this hormonal angiotropic effect, at least in the endometrium, may be exerted indirectly, ie. via release of vascular endothelial growth factor by the endometrial cells [8]. However, other investigators have recently found plasma membrane binding sites for estradiol in human vascular endothelial cells which mediate rapid intracellular signaling [9]. The immunohistochemical findings of our case are in accordance with these data where a positive reaction of the endothelial cells against antibodies to estrogen and progesterone receptors was observed. This is the first case of ovarian hemangioma accompanied by stromal luteinization where such an investigation was performed.

On the contrary while a hyperestrogenic state in females in not uncommon, vascular tumors of the ovary are very rare. It should also be kept in mind that foci of stromal luteinization have been observed as a form of reaction in various ovarian neoplasms, mostly primary epithelial and germ cell tumors, as well as metastatic tumors [10]. Finally, the possibility of hormonal-dependency of ovarian hemangiomas, as well as of other vascular tumors generally, is an issue that requires further study.

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