

Epidermoid or dermoid cysts of the ovary? Clinicopathological characteristics of 28 cases and a new pathologic classification of an old entity

A. Kondi-Pafiti, A. Filippidou-Giannopoulou, E. Papakonstantinou, C. Kleantis
C. Iavazzo, C. Grigoriadis

Pathology Laboratory, Aretaieion Hospital, University of Athens, Medical School, Athens (Greece)

Summary

Objective: The aim of this study was to present the clinical and pathological findings that aid in the differential diagnosis between epidermoid and dermoid ovarian tumors. **Materials and Methods:** This was a 15-year retrospective clinico-pathological study. A total of 28 cases of epidermoid ovarian cysts histologically confirmed after pathological examination at the Pathology Laboratory of Aretaieion University Hospital between January 1996 and December 2010, were analyzed and a literature review was performed. **Results:** Patients with epidermoid cysts presented with a main complaint of either abdominal pain or a palpable abdominal mass. In the 28 cases studied, 18 patients underwent cystectomy and four cases underwent oophorectomy. In six cases of post-menopausal women, abdominal hysterectomy with bilateral salpingo-oophorectomy was performed. No recurrent disease in the pelvis was reported during the available follow-up period which was from 12 to 30 months. **Discussion:** Epithelial epidermoid ovarian tumors represent less than one percent of ovarian surface epithelial tumors. The differential diagnosis of epidermoid cysts includes dermoid (mature cystic teratomas) tumors of the ovary. However, it should be mentioned that up to 17% of teratomas may include epidermoid tumors. In comparison to dermoid cysts which present at an earlier age but with a greater size, ovarian epidermoid tumors present as small- to medium-sized cystic lesions occurring at a significantly older age. The treatment of choice is conservative surgical therapy.

Key words: Ovarian tumors; Mature cystic teratomas, Dermoid cysts.

Introduction

Ovarian tumors with epithelial elements constitute common epithelial tumors, which are mainly composed of various glandular cell types, with the exception of Brenner or transitional cell-type tumors. Ovarian tumors with squamous cell elements are rare and until recently were represented only by mature cystic teratomas, characterized by the presence of stratified squamous cell epithelia in the form of skin, found in the interior of the cysts. Ovarian tumors with morphology of squamous cell carcinomas which are the only squamous cell malignant neoplasms of the ovary, develop from the malignant transformation of epidermoid elements of teratomas.

Mature cystic teratomas or dermoid cysts, are one of the most common tumors (up to 20% of all ovarian neoplasms) that occur in women during their reproductive life [1]. The current classification of teratomas comprises a number of histological types of tumors, such as mature cystic teratomas and monodermal teratomas. Mature cystic teratomas are characterized by the development of various mature tissues, of ectodermal (skin, brain), mesodermal (muscle, fat), and endodermal (mucinous or ciliated epithelium) origin. Monodermal teratomas present basically one tissue type (thyroid tissue in struma ovarian and neuroectodermal tissue in carcinoid tumor). The basic characteristic of all teratomas is the presence of mature or immature tissues of germ cell (pluripotential) origin.

The last World Health Organisation (WHO) classification of ovarian tumors [1] reports a new category of benign squamous cell tumors (epidermoid cysts), classified as a common epithelial cell tumor. These lesions in the previous classification of WHO (1979), were included under germ cell tumor, along with the teratomas of monodermal and of highly-differentiated type. Epidermoid cysts are defined by the presence of benign stratified squamous epithelium, devoid of skin appendages, and of other teratomatous elements of germ cell origin. Their differentiation from mature cystic teratomas lies on the absence of skin adnexae or other tissues, after extended sampling [2-4].

The aim of this study was to present the clinical and pathological findings that lead to the differential diagnosis between epidermoid and dermoid ovarian tumors.

Materials and Methods

This was a 15-year retrospective study. Between January 1996 and December 2010, 2,500 cases of ovarian tumors were examined in the Pathology Laboratory of Aretaieion University Hospital. The cohort included 225 cases of mature cystic teratomas that were identified and re-evaluated, and 24 cases originally diagnosed as dermoid cysts that were re-classified as epidermoid cysts. During the last five years, four cases of epidermoid cysts were classified as epithelial tumors according to the last WHO classification criteria. Pathologic examination of the epidermoid cysts was performed according to standard histological examination procedures, including histological sectioning of paraffin-embedded formalin-fixed tissues, stained by Hematoxylin &

Revised manuscript accepted for publication March 8, 2012

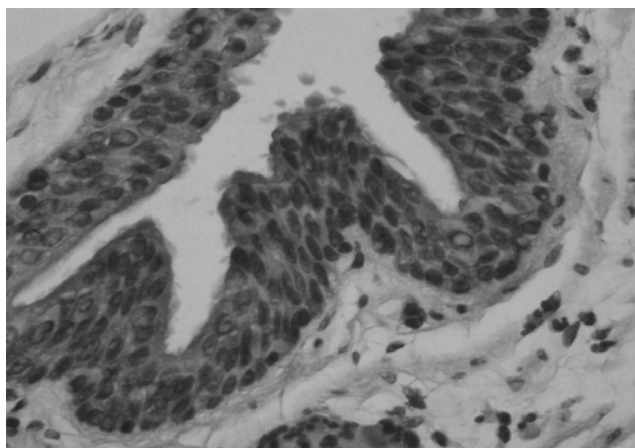


Fig. 1

Figure 1. — Histological section of epidermoid cyst showing immature squamous epithelium at the interior surface without any skin appendages (H&E x 120).

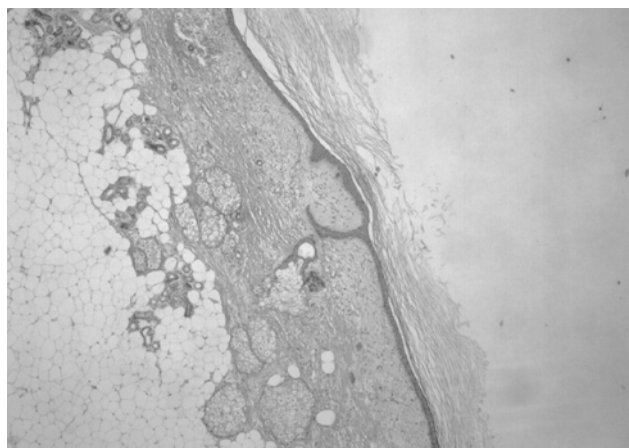


Fig. 2

Figure 2. — Histological section of a typical dermoid cyst showing skin appendages at the interior surface (H&E x 25).

Eosin (H&E). Clinico-pathological characteristics were analyzed (patient's age, signs and symptoms, tumor size, laterality, and tumor histology) and a literature review was also performed.

Results

This clinico-pathological study consisted of twenty-eight cases of epidermoid cysts among 2,500 ovarian tumors diagnosed in Aretaieion University Hospital Pathology Laboratory during a 15-year study period. Twenty-four cases were primary diagnosed as dermoid cysts (teratomas), while four recent cases were correctly diagnosed as epidermoid cysts. The mean patients' age was 55 years (range 17 - 69). The mean diameter of the tumors was 3.9 cm (range 2.3 - 7.4). In all cases, epidermoid cysts were unilateral and located in the right ovary in 18 cases and in the left ovary in the other ten cases. Patients presented with a major complaint of either abdominal pain or of a palpable abdominal mass. In the 28 cases studied, 18 patients underwent cystectomy and four cases underwent oophorectomy. In six cases of postmenopausal women, total abdominal hysterectomy with bilateral salpingo-oophorectomy was performed.

The gross examination of the surgical specimens in cases of epidermoid cysts revealed benign cystic tumors with a smooth external surface, a wall thickness of 0.3 cm - 0.6 cm, and a smooth interior. In 16 cases, the cysts were filled with whitish semi-liquid material and in 12 cases with serous fluid. The interior surface was lined by stratified squamous epithelial cells without the presence of skin appendages or other mesodermal or endodermal germ cell elements (Figure 1). In five cases the squamous epithelium was of immature type without any keratinization, resembling focally-transitional epithelium or immature squamous metaplasia. Additional immunohistochemical study of these cases, for the expression of urothelial marker uroplakin was negative and the transitional cell origin or in the event that these were Walthard cell cysts, were rejected. No recurrent disease in the pelvis was reported during the available follow-up period which ranged from 12 to 30 months.

Discussion

Epithelial epidermoid ovarian tumors represent less than one percent of ovarian surface epithelial tumors. The literature review revealed reports with a limited number of patients ranging from one up to 14 patients presenting an heterogeneous group of tumors with histogenesis not yet clarified [1]. Peters *et al.* [5] suggested a possible common origin from pluripotential coelomic epithelium, based on the similar immunohistochemical profile between epidermoid and endometrioid ovarian neoplasms. Young *et al.* [6], based on a comparative study of epidermoid cysts, Walthard cell nests, and the epithelial components of a Brenner tumor, support the hypothesis that epidermoid ovarian tumors originate from epithelial cell nests by the same mechanism as Brenner tumors do. However, according to Nogales *et al.* [7], some cases of epidermoid cysts may be of germ cell origin, and with the same mechanism can be expressed in the respective lesions of the testis. In five cases in the present study, the squamous epithelium lining of the cysts resembled transitional-type cells by standard H&E staining but immunohistochemical investigation of the cells for the expression of uroplakin urothelial marker was negative. There are reports in the literature, that small epidermoid cysts may be incidental findings in hysterectomy specimens [2, 8, 9].

The differential diagnosis of epidermoid cysts includes dermoid (mature cystic teratomas) tumors of the ovary [2] (Figure 2). However, it should be mentioned that up to 17% of teratomas may include epidermoid tumors [4]. Khedmati *et al.* [2] studied sixteen ovarian epidermoid cysts, representing 1.5% of ovarian surface epithelial tumors, and reported that all tumors were unilateral and small in size. The mean age of the patients was 55 years and is the same as in the present study. In comparison to dermoid cysts which present in an earlier age but with a greater size, ovarian epidermoid tumors present as small-to medium-sized cystic lesions occurring at a significantly older age. The treatment of choice is conservative surgical therapy.

A re-classification of ovarian epidermoid tumors as of epithelial origin rather than including them in the large group of teratomas, was suggested by WHO in 2003. This is based on the fact that they are characterized by different pathological findings and benign behavior. Because of the rarity of this ovarian tumor, there is yet little evidence in order to understand its origin and the possibility of malignant behavior; therefore, an international database is needed to collect all necessary information in order to recommend the best treatment options.

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Address reprint requests to:
A. KONDI-PAFITI, M.D.
Aretaieion Hospital
Pathology Laboratory
Vas. Sofias 76 Av.
Athens 11528 (Greece)
e-mail: akondi@med.uoa.gr