

BREAST TISSUE IN MATURE OVARIAN TERATOMA – AN INTRIGUING CASE

Histopathology

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ABSTRACT

Mature teratoma is the most common ovarian tumor occurring in the reproductive age group. It constitutes 20% of all ovarian tumors and 95% of all ovarian germ cell tumors. It's a benign tumor of the ovary composed of mature tissue representing at least 2 embryonic layers (ectoderm, mesoderm or endoderm). Ectodermal tissue is the most common component, and may include squamous epithelium, sebaceous glands, hair follicles, brain tissue. Although much has been published about ovarian teratomas, in English literature, there are very few reports describing breast tissue in mature teratomas. Breasts are considered an epidermal gland, which develops as diverticula of epidermis into dermis. Here we present the case of a 30-year-old female with a right ovarian cyst. The cystectomy specimen was a solid cystic mass with pultaceous material, grey white areas and few hair shafts. On microscopy the impression was teratoma, mature. Breast parenchyma with ducts with intact myoepithelial layer and fibromyxoid/ collagenous stroma was noted. This case highlights the presence of an unusual finding of mammary gland tissue in a mature cystic teratoma.

KEYWORDS

Mammary gland in teratoma, mature cystic teratoma, ectopic breast.

INTRODUCTION

The terminology 'Teratoma' originated from a Greek word "teraton" which means monster. This terminology was given as the components of all the three germ cell layers are seen [1]. Mature teratoma is the most common germ cell tumor of the ovary, constituting about 10-20% of all tumors of ovary [1]. As per current studies, Mature teratomas are now considered to be parthenogenetic tumors that originate from a single germ cell which has finished meiosis I but not meiosis II [2, 3]. Cytogenetic analysis has revealed that mature teratoma of the ovary is usually homozygous for polymorphic markers [3]. They comprise of 2 or 3 embryonic layers that may include skin, dermal adnexal glands, hair, teeth, bone, cartilage, brain, bronchial/ respiratory epithelium, gastrointestinal or pancreatic tissue [4]. After going through English literature, we found only a few case reports of the breast tissue in mature cystic teratoma. Skin and dermal adnexal structures are the commonest component in the teratoma [5]. Hence the presence of mammary gland in mature teratoma could be attributable to breast being a modified sweat gland [6].

Case Report

A 30-year-old female presented with pain in abdomen. Ultrasonography revealed a well-defined right ovarian cyst with an intact capsule, likely to be a dermoid cyst. Ovarian cystectomy was done. Excision specimen was received in the laboratory for histopathological examination. On gross examination the cyst measured 5 x 4 x 4 cm. The capsule was intact, there were no capsular deposits. On the cut section it was solid cystic with grey white and yellow white areas. Cyst contained pultaceous material and hair. Representative sections were taken and slides were stained with haematoxylin and eosin (HE).

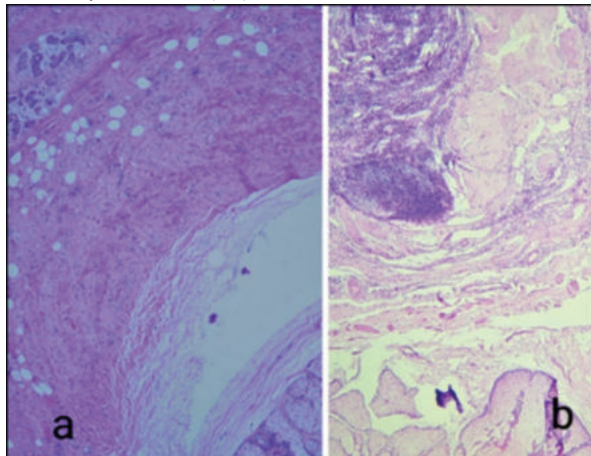


Figure 1: [a] Section showing sebaceous glands at one corner (lower

right) and breast tissue, comprising glands, stroma & adipose tissue (upper left corner) (40x HE), [b] Normal ovarian parenchyma on upper part and sebaceous glands on lower part (40x HE).

Microscopy showed a part of ovarian parenchyma with cutaneous adnexal structures like abundant sebaceous glands, few hair follicles (Figure 1a, 1b). Stratified squamous epithelium with hyperkeratosis was seen. Collagen, adipose tissue, muscle and mammary gland tissue were admixed in variable proportion (Figure 1).

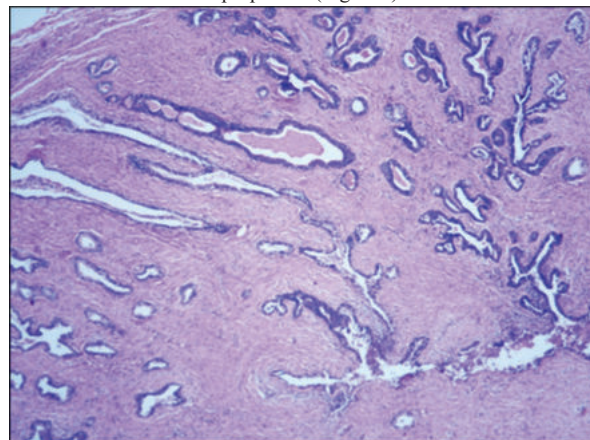


Figure 2: Larger ducts with branching, lumen shows eosinophilic secretion (40x HE).

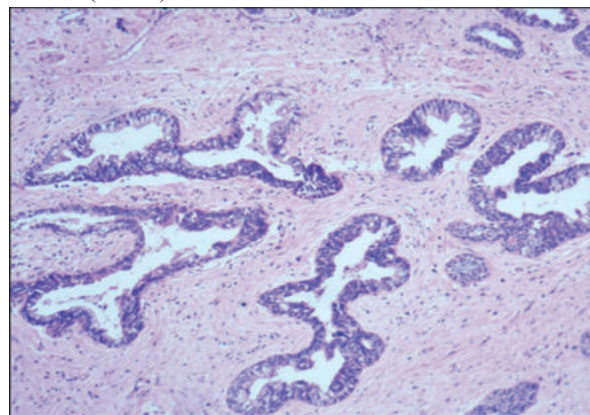


Figure 3: Larger ducts with branching lined by cuboidal to columnar epithelium (100x HE).

There was ectopic breast parenchyma with ductal epithelial and myoepithelial cells. Few glands had ductal epithelial hyperplasia and secretions (Figure 2, 3, 4). The cells were cuboidal to low columnar with moderate amounts of eosinophilic cytoplasm. Nuclei were oval with bland chromatin. The benign mammary duct revealed strong nuclear positivity for estrogen and progesterone receptor immunohistochemical stains (Figure 5). There was no mitosis or immature neural tissue. There was no significant inflammation or necrosis in the material studied. The fibro-collagenous stroma also did not show significant mitotic activity. The patient has been closely followed up and there is no history of recurrence.

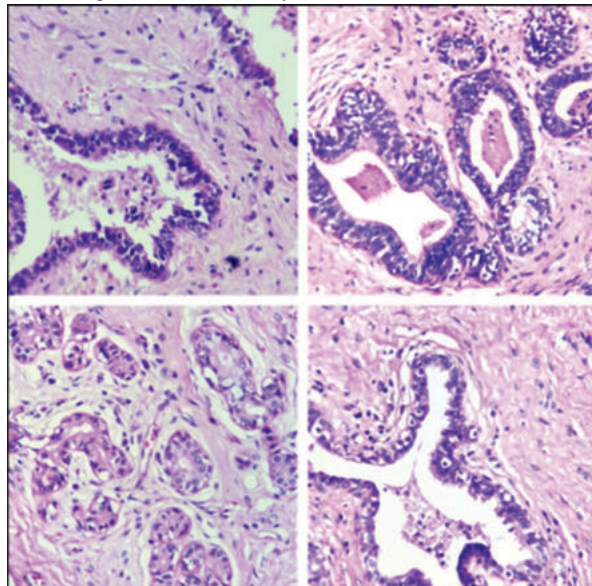


Figure 4: Ducts & glands lined by cuboidal to columnar epithelium with intact myoepithelial layer, luminal eosinophilic secretions and fibro-myxoid stroma (400x HE).

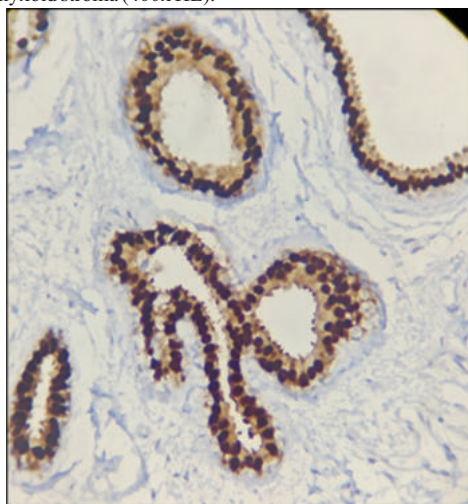


Figure 5: Ducts showing strong nuclear positivity Estrogen receptor (400x ER - Immunohistochemistry).

DISCUSSION

Mature teratomas have been traditionally called dermoid cysts, among all ovarian neoplasms they are the commonest [1]. Teratomas have a wide range of age preference, however most cases are reported between 20 to 40 years of age [1]. The current case was also in this age group. They are usually unilateral and on the right side (72.2%); they are bilateral in 12% of cases [7]. The present case also had a unilateral right ovarian cyst. As per most previous cytogenetic analysis mature teratomas are mostly homozygous (65%), which probably occurs due to meiosis II failure or endoreduplication of a mature ovum; heterozygosity accounts for 35% of cases [2].

Morphologically mature teratomas show a large spectrum of different types of tissue. Ectodermal structures like skin and related structures are the most common followed by mesodermal structures like bone

and cartilage [3, 4]. Thyroid tissue is a common endodermal component [3]. Respiratory epithelium, gastrointestinal epithelium, transitional epithelium muscle, and mature nervous tissue are also seen [3, 4, 7]. Choroid plexus, pancreas, thymus, lung kidney, retina, breast, prostate and pituitary are rarely found on microscopy and only few studies have reported them [3].

Breast tissue is very rare in teratoma. Sandison et al have described a mature cystic teratoma in a pregnant female with breast parenchyma showing adenosis. In their case, they observed poorly formed lobules with dilated ducts, numerous acini of different sizes resembling breast tissue with luminal eosinophilic secretions. The stroma showed connective tissue with few plasma cells [8]. Richard et al (1978) have reported a functioning mammary tissue in teratoma in a 20-year-old primigravida [9]. Similar lactating glandular tissue was reported by Tsubura et al in a teratoma [10]. In older reports Velits (1887) reported a breast in cystic ovarian teratoma, Favell (1905) reported a mature cystic teratoma of the ovary with mammary gland and nipple, a similar case of bilateral ovarian teratoma with well-formed nipple and breast tissue was studied by Norris (1906) [8]. Mammary gland-like structures were noted in a cystic teratoma by Schottlaender (1907) also, however microscopic details of these previous reports are not available [8]. In the present case report, the morphology of glandular components and stroma has been described and representative photomicrographs have been taken. Among other case reports with breast tissue in mature teratoma, Kirova et al reported a case of metastasis of breast carcinoma into mature cystic teratoma [11]. The present case did not reveal any features of malignancy.

CONCLUSION

The presence of ectopic breast tissue in a mature ovarian teratoma is exceedingly rare. Meticulous histopathological examination is mandatory in all the cases of mature teratoma to ensure adequate sampling. Breast tissue can show cyclical changes as it is hormone responsive and may cause discomfort to the patient. Enlargement during gestation due to hormones can result in complications such as torsion or rupture of an ovarian cyst. This case highlights the presence of rare components like mammary gland tissue among other components in a mature teratoma of the ovary.

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