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# RECURRENT ECCRINE HIDRADENOMA OF THE BREAST IN A MALE PATIENT: PROBLEMS IN DIFFERENTIAL DIAGNOSIS

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**Abstract**
**Introduction:** Hidradenoma is an uncommon usually benign tumor of the skin that grows slowly.
**Case report:** We describe a case of a 39 patient with a breast mass. Physical examination revealed a solitary, well-circumscribed tumor, measuring 1 cm by 0.7 cm. No other skin abnormalities were found. A total surgical excision was performed and histologic examination concluded to an eccrine hidradenoma with clear cells.
**Conclusion:** Here we discuss problems in the differentiate this tumor, mainly in this not common location, from a breast primary (ductal carcinoma or adenomyoepitelioma), from a metastatic clear cell carcinoma and from other types of skin tumors. Moreover, this patient presented with a recurrence of the tumor in the same location, suggesting a locally aggressive form of this neoplasia; few reports in the literature are described as at low malignant potential, but definite criteria for this diagnosis are not well defined.

**Key words:** eccrine hidradenoma; breast; clear cell; recurrence

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## Introduction

Hidradenoma is a benign adnexal neoplasm, mostly dermal located, historically considered eccrine, but with evidences suggesting also an apocrine differentiation [1]. This neoplasia presents most often in young adults, and appears to be slightly more common in women than in men. Common locations are head, neck and limbs [2]. The histologic appearance put in the differential diagnosis other skin neoplasms and other tumors depending on the location [3-6]. These tumors are usually benign but they can have rarely low malignant potential, and they should be surgically removed with safety margins, because they have a high local recurrence rate and a potential of malignant transformation [7].

## Case Report

A 39-year-old man presented with a recurrent nodule of the left outer upper left breast quadrant, superficially located. The lesion was asymptomatic. He reported a previous history of a excised breast mass in the same location. No clinical-pathological report of the prior resection was available. Physical examination revealed a solitary, well-circumscribed tumor, measuring 1 cm by 0.7 cm. No other skin abnormalities were found. The tumor was excised and submitted for histological examination.

Tissues were fixed in buffered formalin, paraffin embedded and routinely processed for histological diagnosis. For immunohistochemistry, the Dako REAL™ EnVision™ Detection System, Peroxidase/DAB+, Rabbit/Mouse Code K5007 method was used. The antisera employed are listed in Table I, together with their source, dilution and antigen retrieval method.

## Results

The histopathological result of a needle core biopsy showed a tumor composed of solid sheets of clear cells with an abundant vascularization; the subsequent excisional biopsy (Fig. 1) revealed a lobulated masses in the dermis with focal extension into the subcutaneous fat, without connection with the above skin, composed of two cell types (Fig. 2 a, b): a population of cuboidal cells with eosinophilic cytoplasm and round to oval nucleus with conspicuous nucleolus; elsewhere it consisted of cells with clear cytoplasm containing large glycogen deposits and with a small eccentrically located nucleus. No mitosis were found. Focally, duct-like structures were present, lined by cuboidal cells resulting in perivascular pseudorosettes. The tumor lobules were surrounded by a desmoplastic stroma. No breast ductules were found in proximity of the tumor lobules.

| Antibody | Clone, source | Dilution |
|---|---|---|
| ER | 1D5, DAKO | 1:100 |
| PR | 636, DAKO | 1:100 |
| GCDFP-15 | 23A3, DAKO | 1:40 |
| Mammaglobin | 304-1A5, DAKO | 1:100 |
| CK19 | RCK108, DAKO | 1:50 |
| High molecular weight Cytokeratin | 34βE12, DAKO | 1:50 |
| CK5/6 | D5/16B4, DAKO | 1:50 |
| Cytokeratin 7 | OV-TL 12/30, DAKO | 1:100 |
| Vimentin | V9, DAKO | 1:300 |
| RCC | SPM314, DAKO | 1:50 |
| Calponin | CALP-1, DAKO | 1:50 |
| CD10 | 56C6, DAKO | 1:50 |
| P63 | 4A4, DAKO | 1:100 |
| AR | AR441, DAKO | 1:100 |
| S100 | Polyclonal, DAKO | 1:1000 |

**Table I. Antibodies employed for immunohistochemistry**

**ER Estrogen receptor; PR Progesterone receptor; GCDFP15 Gross cystic disease fluid protein-15; RCC Renal cell carcinoma marker; AR Androgen receptor. DAKO, Glostrup, Denmark**

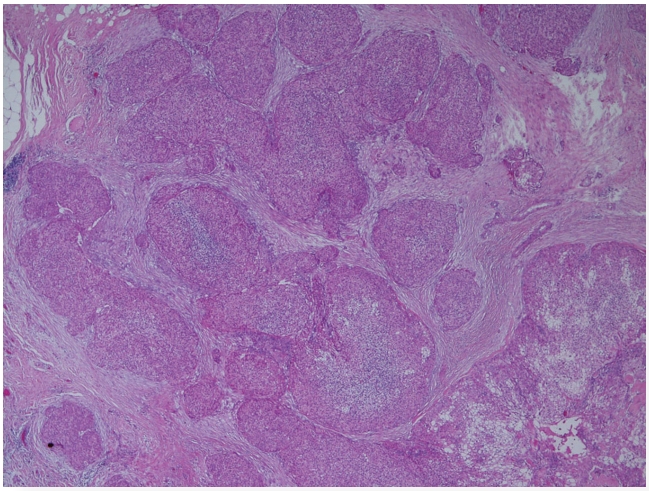

**Figure 1. Excisional biopsy showing a lobulated tumor in the dermis with focal extension into the subcutaneous fat, without connection with the above skin (haematoxylin--eosin; original magnification x 20)**

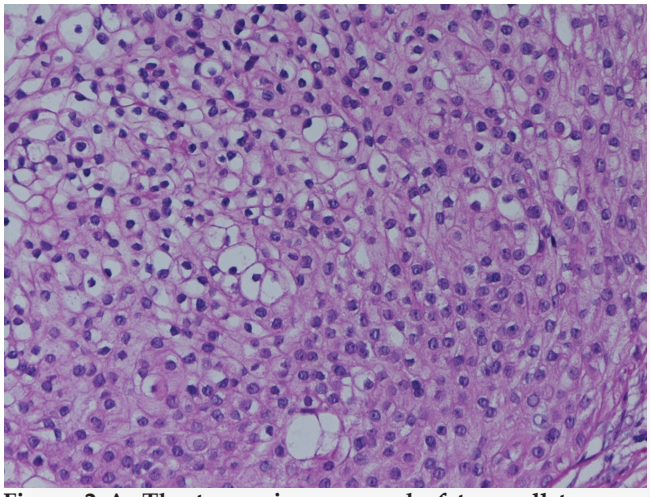

**Figure 2 A. The tumor is composed of two cell types: a population of cuboidal cells with eosinophilic cytoplasm and round to oval nucleus with conspicuous nucleolus; elsewhere it consisted of cells with clear cytoplasm containing large glycogen deposits and with a small eccentrically located nucleus (haematoxylin-eosin; original magnification x 200)**

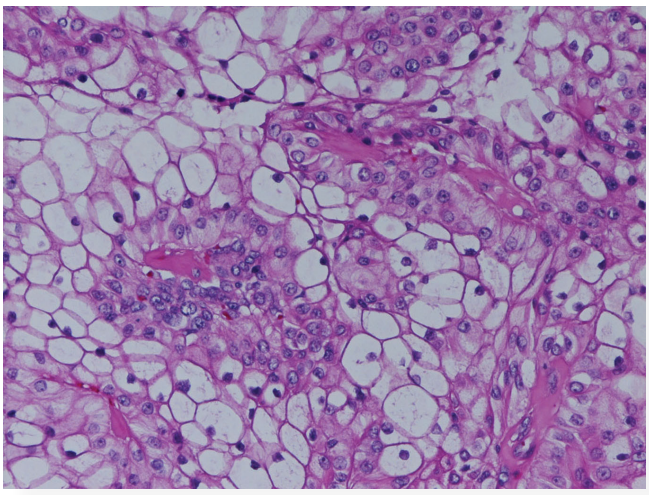

**Figure 2 B. Focally, duct-like structures were present, lined by cuboidal cells resulting in perivascular pseudorosettes (haematoxylin-eosin; original magnification x 200)**

## Discussion

The breast location of this tumor and its particular histological findings include in the differential diagnosis a primary breast ductal carcinoma [3], a metastatic clear cell carcinoma [4], an adenomyoepithelioma [5] and primary skin tumors with follicular differentiation, sebaceous differentiation, or sweat gland differentiation [6]. Against a diagnosis of a primary breast ductal carcinoma, there weren't ductular structures around the tumor, cytological atypia was lacking and the neoplastic proliferation had a biphasic cellular population [3]; moreover, mammaglobin, GCDFP15, ER and PR immunohistochemical staining were negative, whereas in a well differentiated breast ductal carcinoma they would expect to be positive. A diagnosis of a metastatic clear cell carcinoma, mainly a renal cell carcinoma, was considered, but immunohistochemistry revealed that the neoplastic cells were positive for CK7, CK19, CK34βE12 and negative for CD10, vimentin and RCC (renal cell carcinoma). A diagnosis of adenomyoepitelioma was ruled out by the negative immunostaining for myoepithelial antibodies (calponin, CD10 and S100). The tumor showed only positivity for CK5/6, p63, PAS and negativity for PAS-D; even if these markers are quite nonspecific they were not in contrast with a diagnosis of eccrine hidradenoma; the morphology of the tumor along with the negativity for androgen receptor excluded a sebocytic differentiation; moreover, the tumor had no connection with the above skin, excluding a tumor with follicular differentiation.

The clinical and radiological suspicious in this case was of a primitive breast carcinoma; the difficulty in the diagnosis of this tumor was to differentiate if the neoplasia was a skin primary or a breast one, in particular a clear cell hidradenoma, a very rare breast tumor that share the histological features of sweat gland tumors with only 18 cases reported in the literature [5], but the lacking of normal breast ductules around the tumor lobules let us to think that this case originated from the skin.

Eccrine hidradenoma is an usually benign, slowly growing, asymptomatic, solid or cystic sweat gland tumour that occurs on the head, neck and limbs; the breast location is unusual, even if cases located in the trunk and in the breast were reported [5,7], and the male gender is less common [8]. When a tumor with features as ours occurs in the breast it is worthwhile to keep in mind in the differential diagnosis a skin eccrine hidradenoma, the diagnostic clue is the lobulated architecture with the two-cell pattern of proliferation, composed of polygonal cells with distinct cell border and clear cytoplasm, and dark cuboidal cells lining the duct structure [5].

Eccrine hidradenoma shows rarely low malignant potential and the histopathologic criteria of an aggressive behavior are not well defined [9-11]. There are few reports in the literature highlighting that the "malignant" form of this tumor is very rare; all these cases were characterized by a significant rate of locoregional recurrence and some patients developed distant metastatic spread [12]. Hidradenoma with malignant potential is usually found in the scalp, face or anterior surface of the trunk.

Malignant clear cell hidradenoma usually develops de novo, not arising from a benign form, and invades the dermis and subcutaneous tissue; it might share significant histopathological features with its benign form. The mitotic index may not be representative and helpful in the differential diagnosis, that often it's impossible to make. Therefore, the diagnosis of malignancy through standard pathological examination may be extremely difficult [9].

This patient had a history of prior resection of a neoplasia in the same location of the left breast, probably the same lesion that recurred; therefore, this would qualify this tumor as having a possible malignant biological potential and a wide re-excision and careful follow-up is therefore advisable for these worrisome lesions that show an increased risk of recurrence [11].

## Conclusions

It is important to consider eccrine hidradenoma with clear cells as a rare differential diagnosis of cutaneous tumors and, if it arise in the breast region, of primary breast carcinoma with histologic features of sweat gland tumors. Moreover, it is clear, even if it is a very rare event, that this entity could have an aggressive clinical behavior with local recurrences and also metastatic disease in the regional lymphatics, therefore in these "malignant" cases a wide excision should be warranted.

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