Cylindroma of the Breast
Rare to Find, Difficult to Diagnose
A Report of Two Cases

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ABSTRACT

Background: Cylindroma is a benign adnexal tumor occurs as a solitary dermal nodule on the scalp and forehead، but rarely in breast, where the lesion is morphologically and immune phonologically similar to a benign dermal cylindroma and malignant adenoid cystic carcinoma of breast.

In this article, we report two cases of breast cylindroma which were an incidental finding in a breast lumpectomy specimen and discuss the challenge of differentiating breast cylindroma from adenoid cystic carcinoma and the difficulty of establishing a definitive diagnosis and treatment plan.

From period 2000 to 2018, we report two cases of healthy multipara women presented with breast lump for the first time, their breasts imaging exams revealed BIRADS 3 score, fine needle aspirate was done and showed probably benign lesion. Thus, excisional biopsy was recommended to exclude breast carcinoma. Histopathological study proved rare cylindroma tumor of breast and both patients were subjected to periodic follow up.

Conclusion: Breast cylindromas are rare tumor to find, their clinical, radiological and fine needle aspirate cytology results cannot be differentiated from other benign breast tumors. Diagnosis can be reached only by histopathological exam and is confirmed by Immunohistochemical staining to differentiate it from histopathologically similar adenoid cystic carcinoma of breast as the implications for prognosis and management of these lesions are obviously different.

Keywords: Cylindroma, Breast carcinoma, Breast.

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Dermal cylindromas are relatively common benign skin adnexal tumors. They usually occur in the sixth decade of life, with a male preponderance of 9:1.

They present most commonly on the head, neck, or scalp as slowly growing, pink to purple, solitary or multiple, smooth surfaced nodules, which can rarely grow and coalesce to produce the characteristic turban-like mass (turban tumor) ; most are asymptomatic but they can be painful when associated with spiradenoma. Cylindromas have also been reported at other extracutaneous sites including salivary gland, bronchus, lung, breast and kidney[1].

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Cylindroma of the breast is an extremely rare entity, first described in 2001 and only few cases had been published to our knowledge. They occur entirely within the breast parenchyma with no connection to the overlying skin, which is not surprising as breast tissue originates from the primordium that gives rise to the cutaneous apocrine glands[2].

Although the appearance of cylindroma of the breast is identical to that of its dermal counterpart, these lesions arise within the breast parenchyma and it is usually present as a solitary lesion, or may be associated with other lesions[3].

We present here two of these rare cases and we review their radiological and histological exams, their clinical course and discuss its differentiation from the main

differential diagnosis: solid variant of adenoid cystic carcinoma of breast. From a period 2000 till 2018, we report two cases presented tour private clinic with breast mass.

Case One

A sixty-three year old multipara woman patient presented on November 2000, with painless slowly enlarging right breast lump of five years duration with no significant medical disease and no personal or family history of any breast lump or breast cancer.

Physical examination of the patient revealed healthy adult woman with normal general appearance and breast exam revealed palpable non tender mobile solid spherical right upper inner quadrant breast lump with no breast skin changes or nipple changes, no axillary or supraclavicular adenopathy and no other body masses .

Ultrasound exam was done for the patient as a first tool of diagnosis and showed a lobulated hypoechoic mass with a micro lobulated margin with increase heterogeneity but no increase vascularity, (Figure 1).

Mammography exam was done after ultrasound study and showed a well-circumscribed mass with no micro calcifications, skin or nipple changes characteristic of malignancy, (Figure 2).

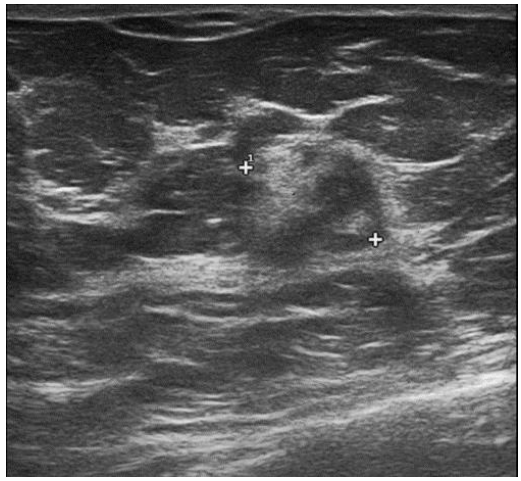

Figure 1: Ultrasound result of case (1).

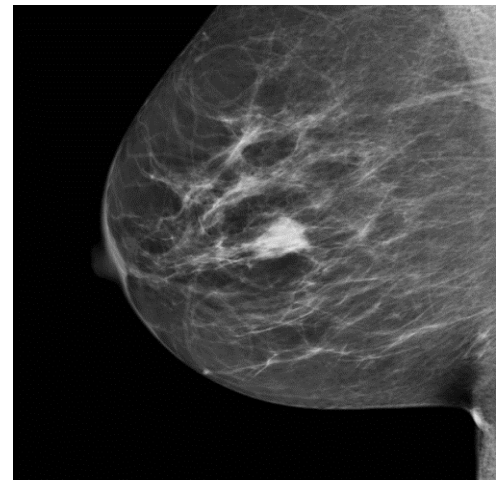

Figure 2: Mammography of case (1).

The lesion was considered probably benign, given BIRADS 3 score on mammo-graphic and ultrasonic imaging, respectively, thus an ultrasound guided fine needle aspirate was decided and performed using 22 G needle, the sample was fixed in 95% alcohol and stained by routine H&E stain. Microscopical examination revealed richly cellular aspirate with multiple clusters of small, uniform monomorphic cells with oval nuclei, scanty cytoplasm arranged in sheets with ill-defined acinar pattern with other large cells with abundant cytoplasm and round to oval pale staining nuclei; diagnosis of probably benign mass was decided, (Figure 3).

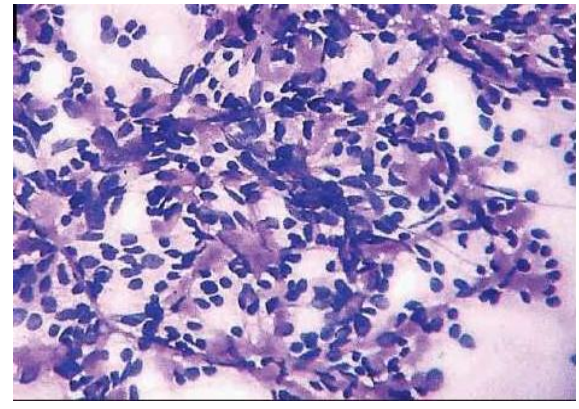

Figure 3: Cytology exam of case (1).

The patient underwent wide local excision for her breast lesion under general anesthesia and passed smooth postoperative course.

Histopathological exam of the patient revealed the following: Gross exam of the excision specimen measured (3 × 2.8 × 2) cm, placed in 10% formalin fixative and on serial sectioning of the specimen, a firm tumor measuring 1.6 cm in maximum dimension was identified, the biopsy was embedded in paraffin wax and stained with haematoxylin and eosin for histological exam.

On microscopical examination, the tumor was composed of irregularly shaped islands and nests of cells with a characteristic "jig-saw" or "mosaic" appearance at low power enclosed by thin strand of eosinophilic stroma; the tumor cells in the centers of the cord were closely packed with scanty cytoplasm and large vesicular nuclei. At the periphery of the nest the cells have elongated basophilic nuclei which are palisaded where they rest on the eosinophilic stroma, neither atypia nor mitosis or necrosis seen; the surrounding uninvolved breast tissue was unremarkable thus histopathological diagnosis of benign eccrine cylindroma was made, (Figure 4).

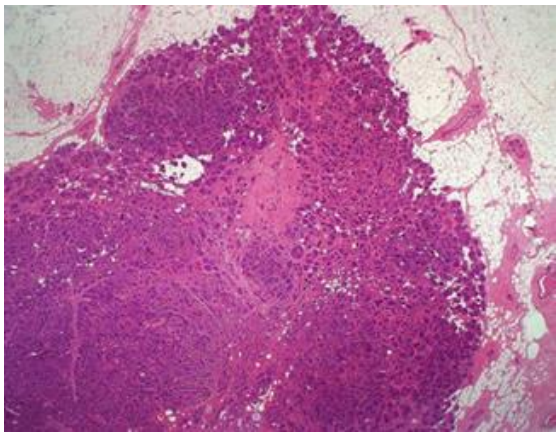

Figure 4: Low power magnification view case (1).

Immunohistochemical staining was performed and confirmed the diagnosis: CK7 was positive in central basaloid cells, S100 protein was positive focally, EMA and CEA were focally positive consistent with eccrine differentiation. The B nest and trabeculae were surrounded by a thickened band of basement membrane that was showed immune-reactivity for collagen IV while immunohistochemistry for ER, PR, GCDFP-15 and CK 20 were negative.

Case Two

A fifty-eight year old multipara woman patient presented on March 2015 with a painless slowly enlarging left retro-areolar breast lump of many months duration, also with no significant medical disease and no personal or family history of any breast lump or breast cancer.

Physical exam of this patient revealed healthy adult woman with normal general appearance and breast left retro areolar solid mildly tender breast mass with no breast skin changes or nipple changes, no axillary or supraclavicular adenopathy and no other body masses.

Ultrasound exam was done also as a first tool of diagnosis and showed a lobulated hypoechoic mass with a micro-lobulated margin and no increase vascularity or surrounding invasion, (Figure 5).

Mammography exam was done after ultrasound study and showed a well-circumscribed mass in the left breast with no micro calcifications nor skin or nipple changes seen in malignancy cases, (Figure 6).

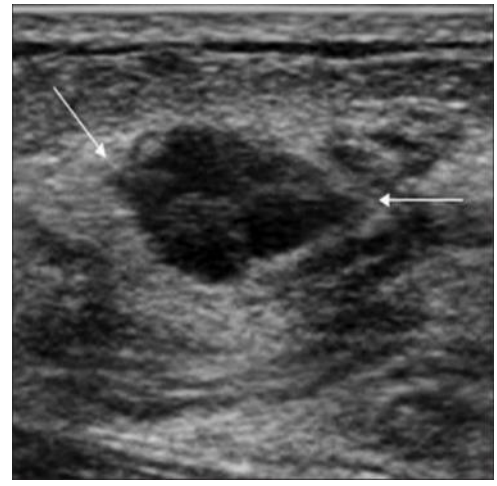

Figure 5: Ultrasound of case (2).

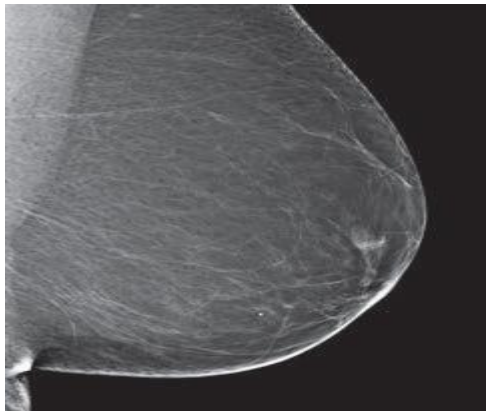

Figure 6: Mammography of case (2).

Again the lesion was considered probably benign, given BIRADS 3 score on mammographic and ultrasonic imaging respectively, thus an ultrasound guided fine needle aspirate was decided and performed using 22 G needle also, the sample was fixed in 95% alcohol and stained by routine H&E stain.

Microscopical examination was similarly diagnosed as probably benign mass, thus excisional biopsy was decided and done under general anesthesia and the patient passed smooth postoperative course.

Histopathological exam of second patient showed the following: Gross exam showed excision specimen measuring (1.8x2.2x1.2) cm with mass that was excised and placed in 10% formalin fixative, and on serially sectioning the specimen, a firm tumor measuring 1 cm in maximum dimension was identified.

Microscopical exam and immune histochemical staining exam results were similar to that of first patient, giving the diagnosis of benign eccrine cylindroma, (Figure 7).

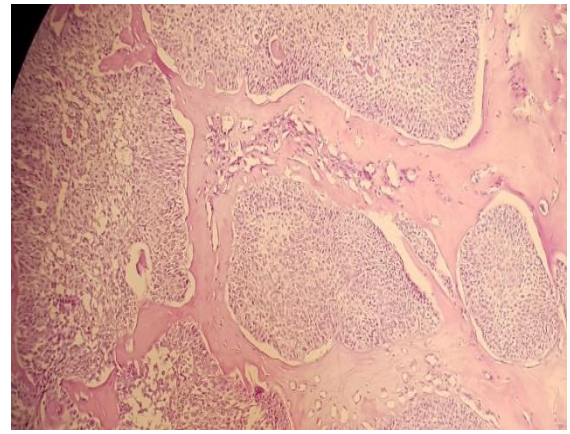

Figure 7: High power magnification of case (2).

Discussion

Cylindromas are uncommon tumor of the sweat glands; the word cylindroma was first used by Billroth in 1959, it is derived from the histopathological appearance of tumor where the nests of cells surrounded by hyaline, resemble a cylinder in cross section[4].

The occurrence of primary breast neoplasms with eccrine and apocrine phenotypes is not surprising because the breast is considered as a modified sweat gland and benign and malignant tumors similar to those that arise in the sweat glands have been described in the breast, including cylindroma. Although some cylindromas are seen in proximity to the major lactiferous ducts of the nipple, they are not connected to the overlying skin[5].

Cylindromas of the breast are rare, usually occur in women older than sixty years as a sporadic, small, and solitary mass, as in our first case, but may occur in younger age group, as in our second case, and may be associated with hereditary cylindromatosis[6].

Breast cylindroma, as in dermal cylindromas, displayed eccrine ducts, some containing inspissated secretions; these eccrine ducts which are an integral component of these tumors, were less numerous in breast than in dermal cylindromas and were highlighted by EMA and CEA stains, also no foci of squamous

differentiation, seen in close association with eccrine ducts , that are seen only in dermal cylindromas[7].

Adenoid cystic carcinoma of the breast is a morphologically heterogeneous neoplasm; its cribriform variant can be distinguished easily from breast cylindroma because of its cribriform structures, mucin content, cytological atypia, mitotic figures, and invasive growth pattern.

In contrast, the solid variant of adenoid cystic carcinoma might be confused with cylindroma, especially in excisional biopsy specimens, as both tumors share nodular and trabecular patterns, basaloid cells, myoepithelial cells, and, rarely, squamous cell, moreover, eccrine ductal structures and hyaline globules of basement membrane also have been recognized in both mammary tumors[8].

With immune histochemical stains for collagen IV, a thickened continuous band of basement membrane seen around the epithelial structures of breast cylindromas in contrast to the thin discontinuous band of basement membrane surrounds the trabeculae or nodules of adenoid cystic carcinoma .

Langerhans cells, which are a constant feature of cylindromas, are absent in adenoid cystic carcinomas; moreover, these tumors display an infiltrative pattern of growth, greater cytological atypia and more mitotic figures than breast cylindromas lesions[9].

There has also been considerable diversity of opinion regarding the biologic behavior of cylindroma ; some has been classified it as a definitely benign tumor, while others have described it as generally benign but with the potentiality of occasional malignant change, locally invasive, and may be with distant metastases later[10,11].

Clear diagnosis is necessary for breast cylindroma as the implications for prognosis and management of these lesions are obviously different from breast carcinoma and the correct diagnosis may obviate the need for unnecessary mastectomy[12].

Follow up of our cases showed no recurrence during whole our study and run completely benign course but these patients should be followed closely, as long term outcome data is not available and cylindroma of the breast often has borderline histologic features posing a dilemma for the clinician in predicting the benign or malignant behavior of these tumors[13], resulting in the potential for under or over-treatment.

Moreover the rare nature of these tumors makes it difficult to accumulate adequate clinical data for physicians to help patients in making informed decisions on the best course of treatment[14].

In conclusion: These two cases were rare presentations in our collection of breast masses cases diagnosed with rare breast cylindroma. There were no specific clinical signs in the physical exam of these patients to suspect the diagnosis clinically. Ultrasonographic and mammographic studies also showed no specific characters for these tumors but had benign impression and did not show any evidences of malignancy.

Fine-needle aspiration result of the patients had no diagnostic character, but the lack of cytological atypia and absence of mitoses seen in malignancy give the diagnosis of benign lesion. Final diagnosis was reached only by histological exam that showed similarity morphologically and immunophenotypically to that of dermal cylindromas with some specifications. Lack of malignant histological characters, and the presence of other morphological and immunophenotype specifications in breast cylindroma can differentiate it from histologically similar adenoid cystic carcinoma. Follow up of these cases from 2000 till 2018 was unremarkable with no recurrence of these lesions, no occurrence of any malignant breast tumour and no arise of any other body cylindroma lesions.

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