http://www.ijp.iranpath.org/

Apocrine Metaplasia in Intraductal Papilloma with Foci of DCIS: A Friend or Foe?

Debjani Mallick, Aniruna Dey, Sonia Gon, Gayatri Ghosh

Dept. of Pathology, ESI PGIMSR& ESIC Medical College, Joka Kolkata, West Bengal, India

KEY WORDS

Apocrine metaplasia
Papillary lesion breast
Ductal Carcinoma in Situ

ARTICLE INFO

Received 02 Jan 2015;
Accepted 15 Apr 2015;

ABSTRACT

Malignant papillary neoplasms of the breast comprise a number of microscopically distinct lesions, where apocrine metaplasia is commonly found in papillomas compared to other papillary lesions including papillary carcinomas. However, association of apocrine metaplasia in papilloma with Ductal Carcinoma in Situ (DCIS) is not very well defined. The lesions with apocrine metaplasia are not only difficult to categories, but also there is controversy regarding their relative risk of subsequent carcinoma development. A case of extensive apocrine differentiation in duct papilloma with DCIS developing in the background of papillomatosis, posing a diagnostic dilemma for the pathologist and a therapeutic challenge for the surgeon, is hereby reported for its uniqueness and rarity. Awareness of this association should be kept in mind by both the pathologist as well as clinician for optimal therapeutic intervention.

Corresponding Information: Dr.Sonia Gon, Dept. of Pathology, ESI PGIMSR& ESIC Medical College, Joka Kolkata, West Bengal, India. Email: drsgon9@gmail.com, Tel: +91-9433348978

Introduction

Malignant papillary lesion of breast encompasses a broad spectrum of lesions comprising ductal carcinoma in situ (DCIS) arising in an intraductal papilloma, papillary DCIS, encapsulated papillary carcinoma, solid papillary carcinoma and invasive papillary carcinoma (1-3).

Currently there is no consensus regarding the criteria of diagnosing a papilloma with DCIS. However, DCIS greater than 3mm in size and DCIS comprising at least a third but less than 90% of the papillary lesion could be categorized as papilloma with DCIS (3).

Otherpapillary lesions, though showing atypical histopathological features but not satisfying the abovementioned criteria have been designated as atypical papilloma. However, some authors prefer to diagnose DCIS arising in papilloma irrespective of the size or extent of the involved area (2).

On the other hand, females of more than 25 yr of age may show apocrine metaplasia frequently and it may be regarded as normal histologic finding. However, a number of breast lesions may show apocrine metaplasia like in- situ and invasive carcinoma, which are diagnostic challenges (4). Papillomas as compared to other papillary lesions including papillary carcinoma show apocrine metaplasia more frequently (5).

The relationship of apocrine metaplasia to

invasive breast cancer is controversial. “It may be a precursor of malignant transformation; a response to the same stimulus that promotes carcinoma or it could indicate instability of the breast epithelium, which causes the development of alterations with a higher propensity for cancer "(6).

A case of extensive apocrine differentiation in duct papilloma with DCIS developing in the background of papillomatosis, posing a diagnostic dilemma for the pathologist and a therapeutic challenge for the surgeon, is hereby reported for its uniqueness and rarity.

Case Report

A 37 yr old, non-smoker, female presented with chief complaint of a vague mass in the right breast and bloody discharge from right nipple. Patient had a history of undergoing microdochectomy thrice for intraductal papilloma of the same breast twice in a span of two years.

On local examination, an ill-defined mass was palpated involving inner quadrant of right breast. Axillary lymph nodes were not palpable. There were no other symptoms. Patient was sent for Mammography, which showed multiple opacities in the right breast (BIRADS 2, Figure 1a). Patient was subjected for core biopsy, which revealed a histopathological diagnosis of recurrent intraductal papilloma with focal atypia and apocrine change. The patient was explained about the risk of recurrence and chance of developing cancer in future in cases of papillomatosis, and various therapeutic options were given and she opted for simple mastectomy of right breast. Subsequently, simple mastectomy was done and specimen sent for histopathological examination.

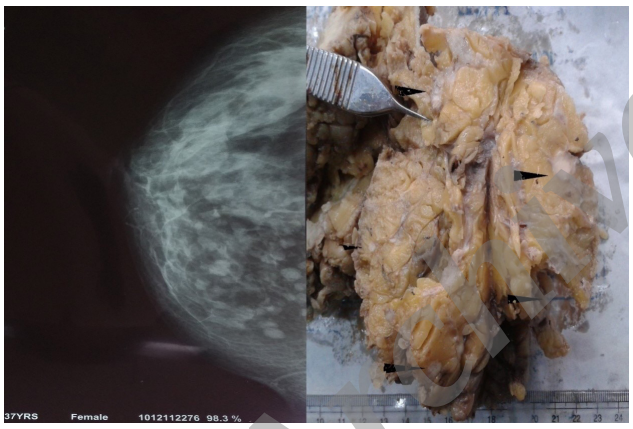

Fig. 1
Multiple opacities in the right breast on mammography (a) Microphotograph showing multiple circumscribed whitish firm lesions in peripheral locations ranging from 0.5-1cm in size (b, marked by solid arrow head).

Pathological Examinations

Simple mastectomy of right breast specimen measured 12 x 8 x 3.5 cm with intact nipple areola. Cut surface showed multiple circumscribed whitish firm lesions in peripheral locations ranging from 0.5-1cm in size (Figure 1b). Surrounding areas of breast tissue showed evidence of fibrocystic disease. H& E stained sections on microscopy showed multiple branching papillae lined by myoepithelial cells in most places. Apocrine differentiation was present. However, some of the papillae showed atypical changes in the lining cells and adjacent small foci of DCIS.

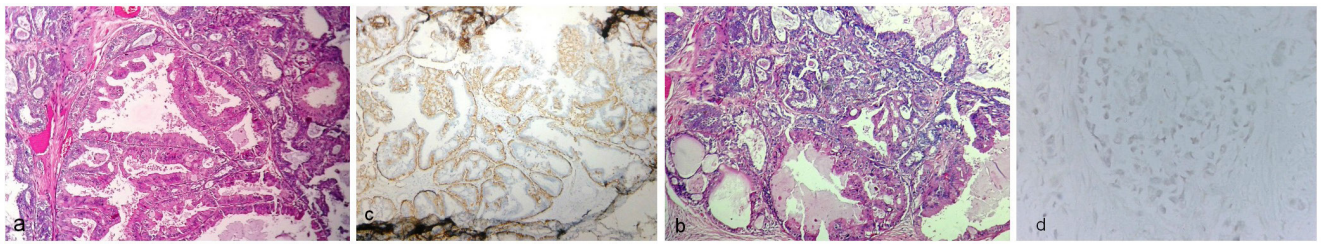

Fig. 2
Branching papillae with apocrine differentiation. One foci showing feature of DCIS (H & E, 400X) (a, b). Myoepithelial cells reactive for SMM in and around papillae (c) and negative in DCIS (d) (SMM, 400X)

Immunohistochemistry was done for smooth muscle myosin heavy chain to locate the peripheral myoepithelial cells. Myoepithelial cells were present around papillae and around the duct in the papillomas except around the foci of DCIS where myoepithelial cells were absent around the papillae as well as around the ducts (Figure 2). Final diagnosis of Duct papilloma with foci of DCIS was offered and the patient was kept under follow up.

Discussion

Spectrum of breast lesions, which exhibits apocrine metaplasia, is broad, with one end of benign lesion like cysts and the other end of malignant lesions like invasive apocrine carcinoma. However, it is important to categorize correctly the lesions exhibiting apocrine metaplasia as they have a relative risk of subsequent carcinoma development (5, 6). Sometimes apocrine change may pose a diagnostic challenge, as the lesion, which exhibits apocrine metaplasia, may be a solid lesion with complex architecture and prominent nuclear atypia (4).

Intraductal papilloma may show multiple papillomatosis in 10% of the cases, which is defined as a minimum of five clearly separate papillomas within a localized segment of breast tissue, and may be associated with in situ carcinoma in 10-37.5% cases (7). The present case also showed a focus of DCIS in intraductal papilloma besides apocrine metaplasia.

Immunohistochemistry does play a role in confirmation of malignant component in an otherwise benign intraductal papilloma. Myoepithelial cells associated antigens distinctly & uniformly show positive expression within the papillae as well as in the periphery of involved duct in benign intraductal papilloma, but this expression is lost in cases of malignant papillary lesion. However, DCIS arising within an intraductal papilloma may show focal or patchy expression (8). Complete absence of immunoreactivity for smooth muscle myosin was seen in area of DCIS while it was positive in papillary portions exhibiting apocrine metaplasia.

The relationship between apocrine change and breast carcinoma, despite numerous studies, remains controversial. The molecular data show that "they can exhibit a range of genetic alterations and that at least a proportion of these lesions may be clonal neoplasms, representing a nonobligatory precursor of DCIS and invasive apocrine carcinoma. This hypothesis was supported by genetic study of Jones et al. who concluded that at least a proportion of the apocrine hyperplastic lesions may be clonal neoplasms, and that given the considerable overlap in copy number changes with the malignancies" (9). The present case of duct papilloma with DCIS developing in the background of papillomatosis with extensive apocrine differentiation is in concordance with the above hypothesis. At this stage, the clinical significance remains uncertain and follow-up studies are required to evaluate further this relationship of apocrine metaplasia with carcinoma development (6).

Role of mammography is also very limited and non-specific in cases of micropapillary DCIS without calcification (7). Mammography in this case also revealed multiple opacities in the right breast could not identify foci of DCIS. Hence, a core needle biopsy was performed in the present case where a diagnosis of intraductal papilloma with focal atypia and apocrine metaplasia was offered.

Jaffer et al. did core biopsy samplings in cases of intraductal papillomas and found that the upstage rate of pure intraductal papillomas on core needle biopsy to atypia or malignancy on excision was 16.4%. They recommended complete excision of these lesions as it may be missed because of sampling error and the close proximity of atypia or malignancy to the intraductal papillomas suggesting precancerous potential (10). Because of the multifocality of the lesion and increased risk of developing into

carcinoma, patient was given a choice of breast conservative surgery or a simple mastectomy in the present case.

The prognosis of papillary lesions, although associated with DCIS, remains excellent (7). However, a clear margin of at least 10mm should be taken in cases of breast conservative surgeries (11).

Conclusion

Apocrine metaplasia, frequently seen in benign breast disease may pose a diagnostic challenge in precancerous lesions, especially in cases where diagnosis is based on mammography and core needle biopsies. Since apocrine epithelium can be a precursor of malignancy, awareness of this association should be kept in mind by both the pathologist as well as clinician for optimal therapeutic intervention.

Acknowledgment

There is no financial disclosure.

Conflict of interest

The authors declare that there is no conflict of interests.

References

1. Mulligan AM, O'Malley FP. Papillary lesions of the breast: a review. Adv Anat Pathol 2007;14(2):108–19.

2. Collins LC, Schnitt SJ. Papillary lesions of the breast: selected diagnostic and management issues. Histopathology 2008;52(1):20–9.

3. Ueng SH, Mezzetti T, Tavassoli FA. Papillary neoplasms of the breast: a review. Arch Pathol Lab Med 2009 Jun;133(6):893–907.

4. Wells CA and ElAyatNon GA. Operative breast pathology: apocrine lesions. J Clin Pathol 2007; 60(12): 1313–20.

5. Grabowski J, Salzstein S L, Sadler G R, Blair S .Intracystic papillary carcinoma: a review of 917 cases .Cancer 2008 September 1; 113(5): 916–20.

6. Trenkic S, Katc V, PashalinaM,ZivkovicV,Milent ijevic M, Kostov M . The histologic spectrum of apocrine lesions of the breast. Arch Oncol 2004;12(1): 61-5.

7. Debnath D, Al-Okati D, Ismail W.MultiplePapillomatosis of Breast and Patient's Choice of Treatment. Pathol Res Int 2010; Article ID 540590 :doi:10.4061/2010/540590.

8. Pal SK, Lau SK, KruperL,Nwoye U, Garberoglio C, Gupta RK, Paz B, VoraL,GuzmanE,Artinyan A, Somlo G. Papillary Carcinoma of the Breast: An Overview. Breast Cancer Res Treat 2010; 122(3): 637–45.

9. Jones C, Damian Si, Wells D, Chaggar R, Lakhan S R, Euse V . Molecular Cytogenetic Comparison of Apocrine Hyperplasia and Apocrine Carcinoma of the Breast. Am J Pathol 2001; 158(1):1-4.

10. Jaffer S, Nagi C, Bleiweiss IJ. Excision is indicated for intraductal papilloma of the breast diagnosed on core needle biopsy. Cancer 2009;115(13):2837–43.

11. Harjit K, Willsher PC, Bennett M, Jackson LR, Metclaf C, Saunders CM. Multiple papillomas of the breast:is current management adequate? Breast 2006;15(6):777-81.

How to cite this article:
Mallick D, Dey A, Gon S, Ghoah G. Apocrine Metaplasia in Intraductal Papilloma with Foci of DCIS: A Friend or Foe? Iran J Pathol. 2016;11(2):167-70.