

Case Report of an Unusual Breast Collision Tumour in a Nigerian Woman

Felix Emeka Menkiti,¹ Cornelius Ozobia Ukah,¹ Christopher Nonso Ekwunife² and Izuchukwu Benerdin Achusi³

¹ Department of Anatomic Pathology and Forensic Medicine, Nnamdi Azikiwe University, Nnewi Campus, Anambra state, Nigeria. ² Department of Surgery, Federal Medical Center, Owerri. ³ Department of Histopathology, Federal Medical Center, Jabi, Abuja.

ABSTRACT

Breast carcinoma is a common malignancy worldwide and in our environment. However, the occurrence of squamous cell carcinoma (SCC) of the skin of the breast is rare, more so, in collision with invasive breast carcinoma of no special type (IBC, NST). Hence, we present this rare occurrence in a 55 year old Nigerian woman who presented with ulcerated breast mass whose pre-operative core biopsy was reported as SCC and post-mastectomy biopsy was reported as a collision of SCC and IBC, NST. She had skin grafting and chemotherapy, with proposed radiotherapy. She was lost to follow up. Surgeons must be aware of this entity, although rare. Since there is no universally accepted guideline for the treatment of breast collision tumour, management should be guided by the most aggressive component in the collision.

Keywords: Breast, Carcinomas, Collision, Squamous, Nigerian.

INTRODUCTION

Breast cancer ranks first in the global incidence of cancers,[1] and currently ranks first in Nigeria both in incidence and mortality.[2] There is also a rise in the incidence of breast carcinomas in Nigeria.[3] The most common type of invasive breast cancer, accounting for 70–80 % of cases, is invasive ductal carcinoma, no special type (IDC, NST).[4] Carcinomas of the breast can also originate from the skin covering over the breast, including Squamous cell carcinoma (SCC).[5] Primary SCC of the skin over the breast is rare, diagnosed when more than 90 % of the malignant cells are of the squamous type.[4] Although there is rising incidence of breast carcinoma, collision tumours (CTs) are a rare occurrence in the breast.

Collision tumour is the occurrence of tumours of differing morphology and histopathological origin at the same anatomical organ or site without cellular intermingling.[6,7] CTs have been described in many organ systems in the body. Few cases of Breast CTs have been reported in the literature, comprising mostly carcinoma and lymphoma or invasive ductal carcinoma with invasive lobular carcinoma.[8] The diagnosis of CTs require histopathology and may also need careful review of immunohistochemistry staining, and specific cytogenetics.[6] To date, only few cases of invasive ductal carcinoma coexisting with squamous cell carcinoma (mostly pure

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*Correspondence:

Felix Emeka Menkiti

(FMCPATH)

Department of Anatomic

Pathology and Forensic

Medicine,

Nnamdi Azikiwe University,

Nnewi Campus, Anambra

state, Nigeria.

Tel: +234 816 810 4151

Email:

fe.menkiti@unizik.edu.ng

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form of metaplastic carcinoma) have been reported in literature, making co-existence of invasive breast carcinoma of no special type (IBC, NST) and primary SCC of the breast an extremely rare occurrence. We therefore report a case of breast CT comprising of well-differentiated SCC and IBC, NST.

CASE PRESENTATION

A 55 year old grand-multiparous Nigerian lady presented to a private specialist clinic nine months ago with 2-year history of progressively increasing left breast mass that eventually ulcerated, and two day history of weakness of the lower limbs. There is no family history of malignancies. On examination, she was found to be pale, cachectic but not jaundiced. There was a fungating mass at the upper outer quadrant of the right breast attached to the underlying structures with multiple right axillary lymph nodes. The power in both lower limbs was grade 4. Her BMI was 17.18 kg/m². The laboratory investigations done revealed anaemia (haemoglobin concentration of 5.5g/dL); white blood cell count of 18.2 x 10⁹/dl; and chest X-ray was unremarkable except for features of hypertensive cardiac changes.

A clinical diagnosis of metastatic carcinoma of breast was made. She was resuscitated with intravenous fluids; anaemia was corrected and she

was placed on antibiotics. Needle core biopsy of the breast showed well-differentiated (Keratinizing) invasive squamous cell carcinoma.

On account of the fungating nature of the breast mass (Figure 1), a decision was made to perform a simple mastectomy. At surgery, which was done within the third week of admission following needle core biopsy report and patient stabilization, mass was found adherent to the pectoralis major and minor. Skin closure was achieved after extensive flap mobilization. Histology of the breast specimen showed a collision tumor (SCC and IBC, NST) of the breast (Figures 2A-B). Immunohistochemical analysis of the tumour showed both components to be CK5/6 positive (Figure 2C), the SCC area only was positive to p63 (Figure 2D) while the only the IBC, NST area was positive to GCDFP-15 (Figure 3A-B). She developed surgical site infection, which was managed and she was discharged home on the 12th post-surgery.

Adjuvant chemotherapy and radiotherapy was planned for the patient. However, patient was lost to follow up after receiving a course of chemotherapy. She was said to have died few months afterwards.



Figure 1: The breast mass with extensive ulceration

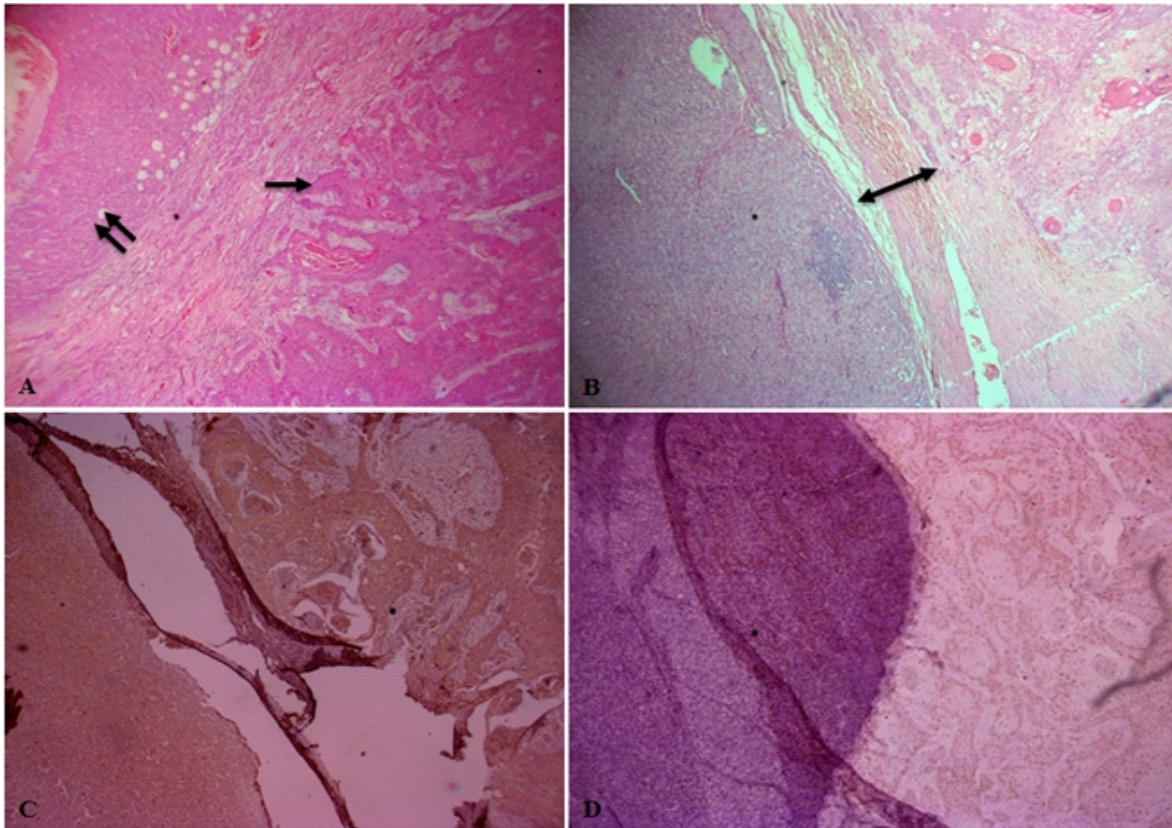


Figure 2: A and B are H&E (X100) photomicrographs showing well differentiated squamous cell carcinoma with keratin pearls (single arrow in A) clearly separated from the invasive breast carcinoma area (double arrow in A) by thick fibrous septa (Arrow with double-head in B). CK5/6 immunohistochemical stain was positive in both components (C: x100) while the SCC component only show nuclear staining for p63 immunohistochemical stain (D: x100).

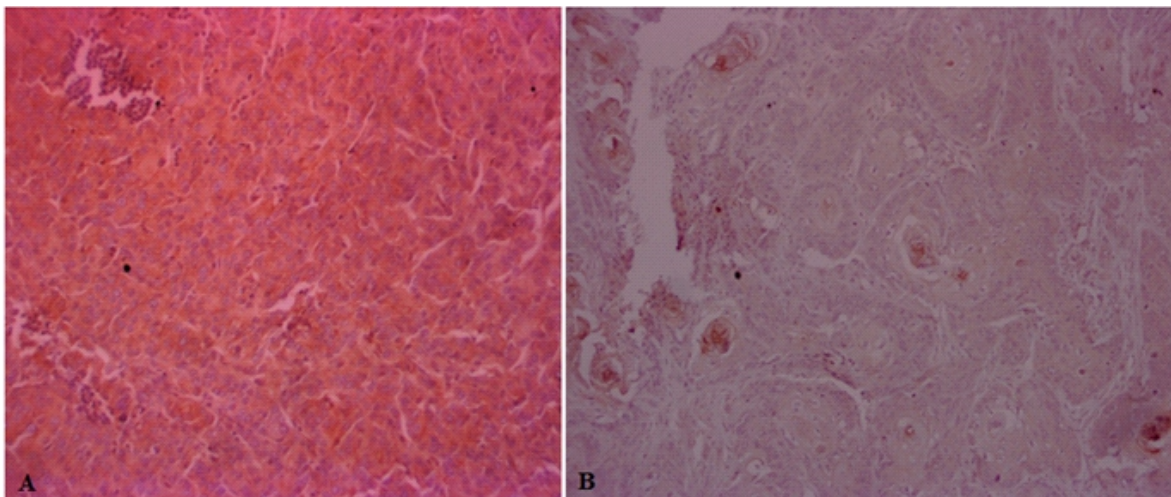


Figure 3: GCDFP-15 immunohistochemical staining showed positive cytoplasmic staining for the IBC (A) while the SCC area is negative (B) (x100).

DISCUSSION

Cancer is the leading cause of mortality worldwide, with breast cancer being the commonest in incidence.[1,9] The breast is composed of organized glandular, fatty and connective tissues covered on the exterior by skin. Although most cancers of the breast are of epithelial origin, commonly IBC NST,[10,11] primary cancers affecting the breast can arise from any of the breast components and its skin covering. The primary non-breast malignancies of the breast include squamous cell carcinoma (SCC) arising from the skin over the breast.

Primary skin SCC of the breast is rare,[4] and must be distinguished from pure metaplastic carcinoma of the breast with predominant squamous differentiation by the presence of keratin pearl formation and the absence of other components such as ductal cells, spindle cells, chondrocytes, osteocytes, and striated muscle cells.[12] It has an excellent prognosis when compared with metaplastic SCC.[13] Hence, the need for proper diagnosis to aid choice of therapy. It usually originates from the epidermis, the nipple, epithelium of deep-seated epidermoid cyst or squamous metaplasia on a background of chronic inflammation.[14]

CT is the occurrence in an anatomic site of two or more morphologically distinct neoplastic lesions maintaining distinct borders. It is well documented in literatures with occurrence in all organs of the body,[15] and as a combination of two benign tumors, a benign and malignant or two malignant tumors.[16] The breast is not exempted from the occurrence of CTs, however, it is a rarity. Even rarer is the occurrence of SCC and Invasive breast carcinoma, NST. Although there are reported cases of breast CTs with SCC component,[17,18] a search of the literatures showed only three reported cases of SCC and IBC, NST.[4,19-21] Hence, this may be the fourth in the series; and the first reported case in our environment.

The index case is that of a collision of two malignant tumors: primary SCC of the skin of the breast and invasive breast carcinoma of no special type. The SCC was noted to be connected to the dysplastic epidermis of the breast skin, well differentiated, with numerous keratin pearls formation; and harbour no other component suggestive of metaplastic carcinoma of the breast which is a high-grade tumour. Although metaplastic carcinoma of the breast has broad range of microscopic appearances including pure metaplastic SCC, and lacks specific clinical and radiological signs resulting in significant diagnostic challenges;[4] proven connection of the tumour cells with the overlying epidermis which is also dysplastic excludes metaplastic carcinoma.[18,19] The SCC area in this index case was noted to be clearly separated from the IBC, NST area by a thick fibrous septa (Figure. 2A-B), and P63 immunohistochemical stain (which is considered myoepithelial and squamous cell marker) showed strong diffuse staining for the SCC and completely negative for the IBC, NST component (Figure. 2D). Metaplastic carcinoma of the breast lacks the presence of myoepithelial cells, hence exhibits negative staining to p63 immunohistochemistry.[22]

The mechanism for the simultaneous occurrence of primary SCC and IBC, NST in this particular case is uncertain. It is possible for SCC to arise from a chronic ulcer or from an irradiated skin.[23] However, none of this is likely in the index case as there was no history of irradiation in the past and the history of ulcer is albeit short. The exact mechanism underlying the development of collision tumours is not clear. There are two proposed theories, including the more favoured tumour heterogeneity theory and the hybrid theory. In the tumour heterogeneity theory, Cornejo *et al.* opined that the components of a collision tumour arise from different clones, occurring either as a mere coincidence, field cancerization in which areas of skin that undergo recurrent skin damage have an increased chance of developing more than one separate neoplasms in

one location or through paracrine effect, in which interaction of one neoplasm produces epidermal or stromal changes that induce a second independent neoplasm.[24] On the other hand, the clonal hypotheses believed that collision tumours may arise from some mechanisms including the formation of hybrid neoplastic cells from a parent cell, random genomic derepression of neoplastic cells or dedifferentiation of neoplastic cells to a common stem cell precursor.[25]

The prognosis of CT depends on the histopathologic subtype and pathologic stage of the more aggressive tumour component.[26] Also, No standardized guidelines and tailored treatment exists for collision tumours of the breast either due to its rarity or lack of follow-up as noted in some of the reported cases.[20] Alawami *et al.* opined that the management strategy should be planned to appropriately tackle the most aggressive component.[4] Our index case had radical mastectomy followed by planned adjuvant chemotherapy and radiotherapy based on the stage of the IBC, NST component. However, she only accessed a course of the adjuvant chemotherapy having been lost to follow-up, and was reported to have died few months later. Due to wound breakdown post-surgery, the plastic surgeon was called in for a reconstructive surgery. This underscores the need for multimodal approach to the treatment of CTs. The patient also presented late, a factor that delays diagnosis and reduces chances of survival for cancer patients.

CONCLUSION

As is evident from this case, the diagnosis of collision tumour of breast could require a large tissue biopsy, which needs an open biopsy.

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