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A Giant Necrotic and Hemorrhagic Papillary Carcinoma of the Breast

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Background	Invasive papillary carcinoma of the breast (IPCB) is a rare form of breast cancer, comprising less than 1% of retrospectively diagnosed cases. It is more common among postmenopausal women, has a more favorable prognosis, and is not typically metastatic. Common presentations include a painless, slow-growing breast mass, with or without hemorrhagic nipple discharge.
Summary	We present the case of a giant hemorrhagic, necrotic breast mass subsequently diagnosed as invasive papillary carcinoma following emergent resection in a 78-year-old female. Treatment involved left total mastectomy, partial chest wall resection, and limited axillary lymph node dissection. The patient is currently well-healed but has declined chemotherapy and radiation. She plans to pursue hormone therapy.
Conclusion	While treatment of IPCB tends to follow that of more common breast cancers, the treatment protocol is poorly defined due to its rarity. We have elected to present the following case of IPCB due to the rarity of this disease, the severity of the presentation, and the requirement for emergent treatment.
Key Words	invasive papillary carcinoma of breast (IPCB); necrotic breast mass; mastectomy; emergent operation

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Case Description

A 78-year-old female with no past medical or surgical history presented with a complaint of left breast bleeding after minimal trauma involving striking her chest against a door frame. She confirmed overlying skin changes, ecchymosis, and left breast enlargement for three years. She had never completed a screening mammogram or conducted self-breast examinations.

On physical examination, vitals remained stable (T: 36.7, P: 104, BP: 141/73, RR: 18, O2 sat: 96% on room air); however, the left breast was firm and grossly enlarged with dusky red-purple coloration. A 3 cm × 5 cm necrotic wound was also present with evidence of active bleeding from the wound bed and edges (Figure 1).

Figure 1. Clinical Exam Depicting Grossly Enlarge Left Breast With Overlying Skin Changes, Obliteration Of Nipple, and Large Necrotic Wound (3 cm × 5 cm). Published with Permission

Chest CT identified a large, necrotic left chest mass measuring 14.1 cm × 19.0 cm × 20.3 cm with extension into the pectoralis major (Figures 2 and 3). Multiple enlarged left axillary lymph nodes were also identified, the largest measuring 3.0 × 3.5 cm (Figure 2, arrow). A pressure dressing was applied to achieve hemostasis.

Figure 2. Enhancing Partially Necrotic Left Chest Wall Mass with Adjacent Left Axillary Lymphadenopathy (arrow). Published with Permission

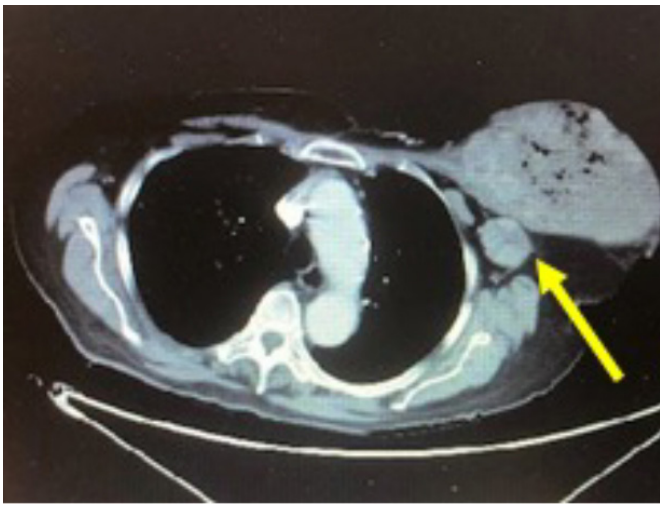
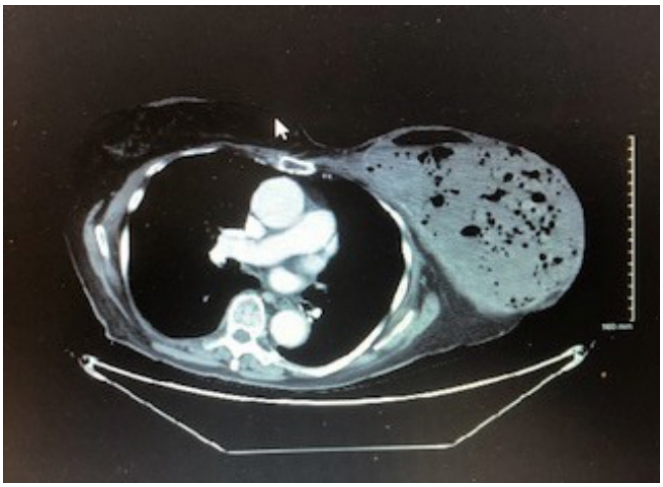


Figure 3. Enhancing Partially Necrotic Left Chest Wall Mass in Largest Dimension 14.1 cm × 19.0 cm × 20.3 cm. Published with Permission



Further workup involving mammography to evaluate for contralateral disease and ultrasound-guided left axillary lymph node biopsy was planned to evaluate for staging and pathology. Due to concern for bleeding and friability/necrosis, a biopsy of the left chest mass was deferred.

The following morning, the patient developed active bleeding from her chest wound, with a decrease in hemoglobin from 11.1 to 7.1, with stable vitals. Due to her acute bleeding, she was taken to the operating room emergently after receiving 1 unit PRBCs. Her dressing was removed, revealing large amounts of necrotic blood with active bleeding from the wound bed. The wound was packed and closed

so that we could proceed with prepping and draping the patient. Intraoperatively, the mass was confirmed to invade pectoralis major fascia and a portion of the muscle. We then proceeded with a left total mastectomy, partial chest wall resection, and limited axillary node dissection (Figure 4).

Figure 4. Intraoperative Photo; Post-Total Mastectomy, Partial Chest Wall Resection, and Limited Axillary Node Dissection. Published with Permission

The wound was closed primarily with the assistance of the plastic surgery team by raising circumferential skin flaps. Postoperatively, she was evaluated by the medical oncology service, who recommended systemic staging with PET scan and treatment with radiation and chemotherapy due to the advanced nature of her disease; the patient declined further staging and treatment at that time. The postoperative course was uneventful, and she was seen one month postoperatively with good progression of wound healing. The patient has still declined adjuvant chemotherapy and radiation but plans to undergo hormone therapy.

The final pathology revealed invasive papillary carcinoma with extensive necrosis involving 95% of the specimen; there was evidence of metastatic adenocarcinoma within 8/8 examined lymph nodes (Figure 5). The tumor was ER-positive, PR positive, HER2/neu 2+ (borderline), HER-2/neu FISH non-amplified, pT3N3aM0.

Figure 5. Final specimen. Published with Permission

Discussion

Papillary carcinoma is a distinct family of breast cancer. The group is defined by the presence of an aberrant fibrovascular core surrounded by epithelium. Care must be taken to distinguish these lesions from benign papillomas, which is completed through pathologic examination of the myoepithelial layer, which remains intact in benign papillary lesions. Papillary cancers are typically intraductal; however, they can extend beyond this architecture and be deemed invasive. Classification of IPCB is seen in less than 1% of breast cancers; this diagnosis requires the presence of an infiltrating lesion with a structure consisting of >90% papillary morphology. Necrosis may be present, however, in small regions and are often concordant with biopsy sites.[4,6] With the rarity of this entity, it is not surprising that confusion may occur when dealing with other similarly named breast lesions. One example is invasive micropapillary carcinoma, which lacks a true fibrovascular core and consists of malignant cells in a nest or tube-like arrangement with surrounding clear spaces. Differentiating these lesions is crucial, as invasive micropapillary carcinoma is more aggressive, can be affiliated with metastasis to axillary nodes, and exhibit lymphovascular invasion.[4,6]

Invasive papillary carcinoma is more common in postmenopausal females in the sixth to eighth decade of life. Clinical presentation can involve a painless, slow-growing breast mass localized to the central portion of the breast and may be accompanied by hemorrhagic nipple discharge.[5,7] Radiologic findings for papillary carcinomas may vary; however, they may appear as an intracystic mass, intraductal mass, or as a solid pattern with an intraductal mass completely filling the duct. Intraductal masses may also induce ductal dilation visible on ultrasound. Calcifications may be seen in either benign or malignant papillary lesions. However, microcalcifications were associated more commonly with malignant lesions. Unfortunately, both benign and malignant papillary lesions tend to be viewed as well-circumscribed ovoid or rounded masses.[4,6]

In terms of treatment, modalities may be variable due to the scarcity of IPCB. In many cases, clinical strategies for IPCB resemble those for the more common forms of breast cancer, including the use of mastectomy with axillary dissection and options for chemotherapy and radiation treatment. Unfortunately, specific treatment guidelines and data on the effectiveness of treatment modalities (including chemotherapy) are lacking due to the rarity of this form of breast cancer.[2–4] There is still ongoing debate on whether papillary lesions identified through core needle biopsy should be excised or simplysimply monitored with conservative surveillance.[4]

In this patient's case, while age and postmenopausal status were typical for invasive papillary carcinoma, her presentation deviated from classical findings. Features that varied included the size of the mass, the degree of specimen necrosis involved, the presence of acute hemorrhage requiring a damage control procedure, and evidence of metastatic disease. All features indicated a higher grade lesion with a poorer prognosis than other cases of IPCB.

This patient's presentation highlighted the lack of IPCB treatment protocol. In this case, evidence of acute hemorrhage caused an oncologic procedure to be swapped for damage control due to the necessity for patient safety and the extent of the mass. As a result, preoperative workup was aborted, and surgical resection was indicated in this emergent circumstance.

Conclusion

Papillary carcinoma of the breast is defined by the presence of epithelial proliferation surrounding fibrovascular cores. Pending the degree of proliferation and depth of invasion, these lesions may be classified as invasive or in situ.[1,4,6] Invasive papillary carcinoma of the breast is an exceptionally rare form of breast cancer, comprising less than 1% of cases. IPCB tends to impact postmenopausal women in the sixth to eighth decade of life.[1,4,6] While presentation may involve a painless, slow-growing breast mass, or hemorrhagic nipple discharge, it may also present as an asymptomatic lesion on radiographic exams.[5,7]

Due to the rarity of papillary carcinomas, especially the subclass of invasive papillary carcinoma, specific treatment guidelines are lacking. In cases requiring emergent intervention, such as those involving acute hemorrhage, aborting preoperative workup to allow for prompt surgical intervention is indicated.[1–5,7]

Lessons Learned

IPCB usually presents with small, low-grade tumors in postmenopausal women with a favorable prognosis. It can present as an advanced tumor complicated by hemorrhagic appearance in an emergent setting in rare cases.

The majority exhibit estrogen and progesterone receptor expression. As a result of these characteristics, IPBC is associated with favorable clinical outcomes. In some cases, axillary lymph-node metastases have been documented in patients.

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