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Case Presentation

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A Giant Invasive Papillary Breast Carcinoma: A Rare Case Report

Joko Wibowo Sentoso[1*] and Widyanti Soewoto[2]

[1]Resident of General Surgery, Faculty of Medicine, Sebelas Maret University/Dr. Moewardi Hospital, Indonesia

[2]Surgical Oncologist, Department of Surgery, Faculty of Medicine, Sebelas Maret University/Dr. Moewardi Hospital, Indonesia

[*]**Corresponding author**: Joko Wibowo Sentoso, Resident of General Surgery, Faculty of Medicine, Sebelas Maret University/Dr. Moewardi Hospital, Surakarta, Indonesia

Abstract

Introduction: Invasive papillary carcinoma is an uncommon type of breast cancer and account for approximately 0.5% of all invasive breast carcinomas that predominantly affects postmenopausal women. Due to the limited number of case reports and small-scale retrospective studies, there is a lack of widespread awareness about this tumor, making its clinical management challenging. The existing literature highlights that invasive papillary carcinoma has distinct pathological characteristics and biological behaviors. It is primarily classified as the luminal type and shows a low incidence of lymph node metastasis, contributing to its generally positive prognosis.

Case report: We report a rare case of Invasive Papillary Breast Carcinoma in a 48-year-old premenopausal woman who presented with a gradually enlarging, painless retroareolar mass in her right breast, persisting for four months. The patient previously underwent an incisional biopsy at another hospital, and the histopathology results showed invasive papillary breast carcinoma. The patient has undergone a chest CT-scan for diagnostic confirmation and surgical guidance. The patient underwent a right-sided modified radical mastectomy, and histopathological examination of the specimen confirmed the diagnosis of Invasive Papillary Carcinoma. Immunohistochemical analysis further validated this diagnosis.

Conclusion: Although the treatment of Invasive Papillary Breast Carcinoma generally aligns with that of more common breast cancers, its protocol remains unclear due to the condition's rarity. We chose to

present this Invasive Papillary Breast Carcinoma case because of the disease's uncommon nature, the severity of the symptoms, and the need for urgent intervention.

Keywords: Invasive papillary breast carcinoma; Modified radical mastectomy; Uncommon type of breast cancer

Introduction

Papillary neoplasms of the breast encompass a wide spectrum of proliferative conditions, ranging from benign and atypical growths to malignant tumors. They represent less than 3% of all breast lesions **[1-4]**. The latest WHO classification of breast tumors (5th edition) categorizes papillary neoplasms into both benign and malignant types **[5].** Benign papillary neoplasms, commonly referred to as intraductal papillomas, are frequently observed in multiparous women and carry a low risk of malignancy **[6].** However, it is important to recognize that these benign lesions, while confined to the breast ducts, elevate the risk of breast cancer. This risk is greater in women with multiple papillomas and is approximately 1.5 to 2 times higher in those with solitary papillomas **[7,8].** Malignant papillary neoplasms include papillary Ductal Carcinoma in Situ (DCIS), Encapsulated Papillary Carcinoma (EPC), Solid Papillary Carcinoma (SPC), and Invasive Papillary Carcinoma (IPC) **[8].** Invasive papillary carcinoma (IPC) typically occurs in postmenopausal women of non-Caucasian descent, most commonly between the ages of 60 and 80 **[9,10].** In a study reviewed 284 IPC cases alongside 300 Invasive Ductal Carcinoma (IDC) cases, revealing that the majority of IPC patients (79.23%) were over 50 years old at the time of diagnosis, a significantly higher percentage compared to IDC patients (39.00%). Furthermore, most IPC patients (74.30%) were postmenopausal, in contrast to 35.00% of IDC patients **[11].**

Case Presentation

A 48-year-old premenopausal woman who presented with a gradually enlarging, painless retroareolar mass in her right breast, persisting for four months. The physical examination showed that the patient had asymmetrical breasts, with the nipples positioned at different levels **(Figure 1A).** The tumor encompassed the entire right breast, measuring 17.5 x 14 x 9 cm, characterized by a firm consistency, unclear boundaries, and limited mobility **(Figure 1B)**. The breast skin appeared red and swollen, with noticeable dehiscence **(Figure 1C)**. No palpable lymph nodes were detected in either axilla or in the Supraclavicular and infraclavicular regions, and there was no evidence of skin dimpling. The patient previously underwent an incisional biopsy at another hospital, and the histopathology results showed invasive papillary breast carcinoma. The patient has undergone a chest CT-scan for diagnostic confirmation and surgical guidance. The patient underwent a right-sided modified radical mastectomy, and histopathological examination of the specimen confirmed the diagnosis of Invasive Papillary Carcinoma. Immunohistochemical analysis further validated this diagnosis.

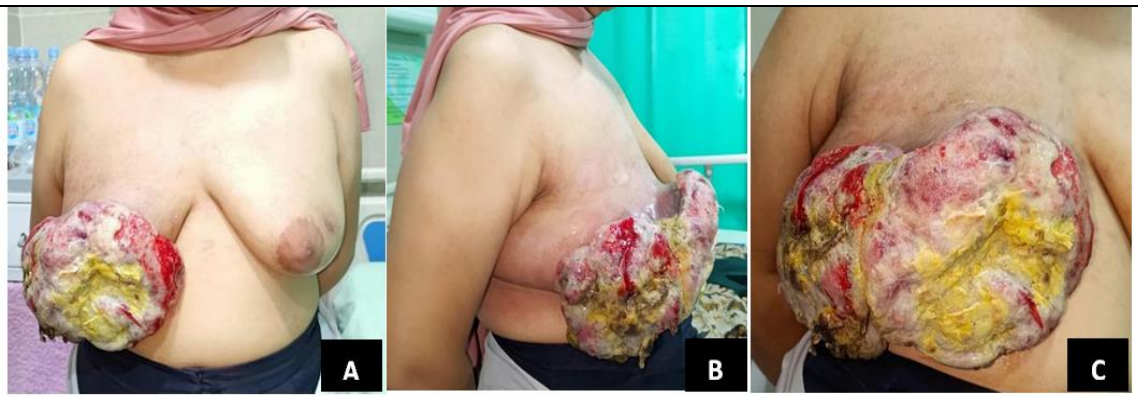

Figure 1: The physical examination showed that the patient had asymmetrical breasts, with the nipples positioned at different levels (A). The tumor encompassed the entire right breast, measuring 17.5 x 14 x 9 cm, characterized by a firm consistency, unclear boundaries, and limited mobility (B). The breast skin appeared red and swollen, with noticeable dehiscence (C). Published with Permission.

The patient has a history of an incisional biopsy and with the results of invasive papillary breast carcinoma in January 2025. The Chest CT-Scan with contrast in February 2025 showed a semisolid mass that infiltrates the pectoralis major muscle. The size of the mass was 17.5 x 14 x 9 cm appearances were consistent with a invasive papillary breast carcinoma **(Figure 2)**.

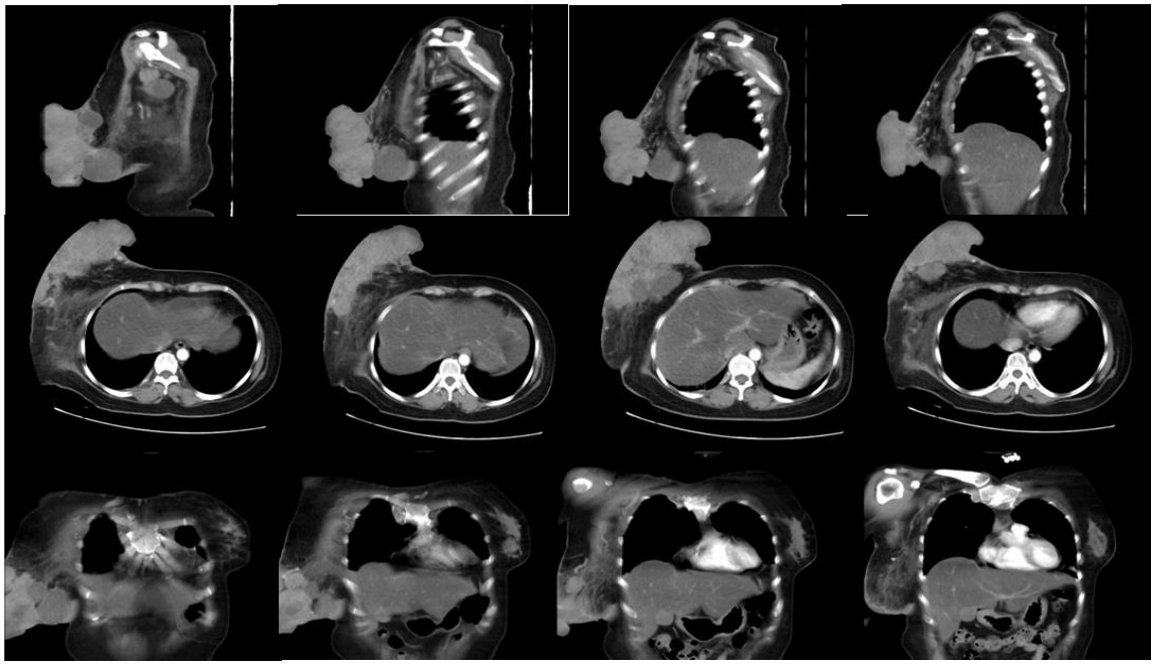

Figure 2: Enhancing Partially Necrotic Right Chest Wall Mass in Largest Dimension 45 cm × 35 cm × 25 cm.

Laboratory assessment in February 2025 showed that hemoglobin concentration was 10.3 g/L; mean cell volume was 77.9 fL, normal white blood cell counts (6.9 g/L); platelet counts (520 g/L). Biochemical assessment based on Urea 29 mmol/L, Creatinine 0.7 µmol/L). The patient underwent a modified radical mastectomy to excise the lesion and remove lymph nodes from the axillary region, aiming to lower the risk of metastasis and recurrence. Since the tumor involved the entire breast, the procedure led to substantial loss of surrounding skin and tissue **(Figure 3).**

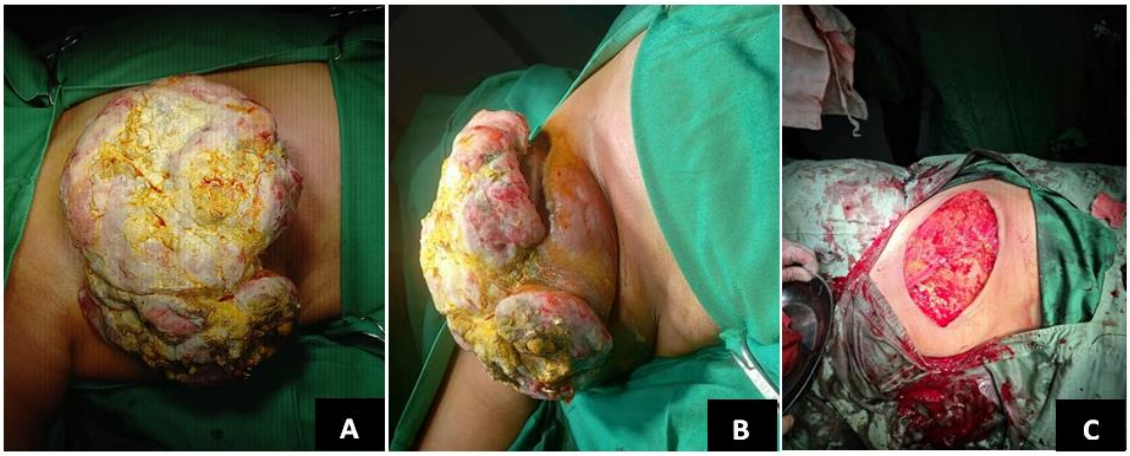

Figure 3: Intraoperative: Initial incision design of above view (A); Initial design incision of side view (B); Defects after modified radical mastectomy (C). Published with Permission.

The specimen displayed a wrinkled surface with two fissures measuring approximately 15 × 10 cm and 12 × 10 cm, respectively **(Figure 4A)**. Dark-brown blood clots were present within the capsule and along the luminal wall, accompanied by significant necrosis in certain regions **(Figure 4B)**. To accurately determine the tumor's type and characteristics, tissue samples were taken from various areas for Hematoxylin Eosin (HE) staining and Immunohistochemistry (IHC) analysis.

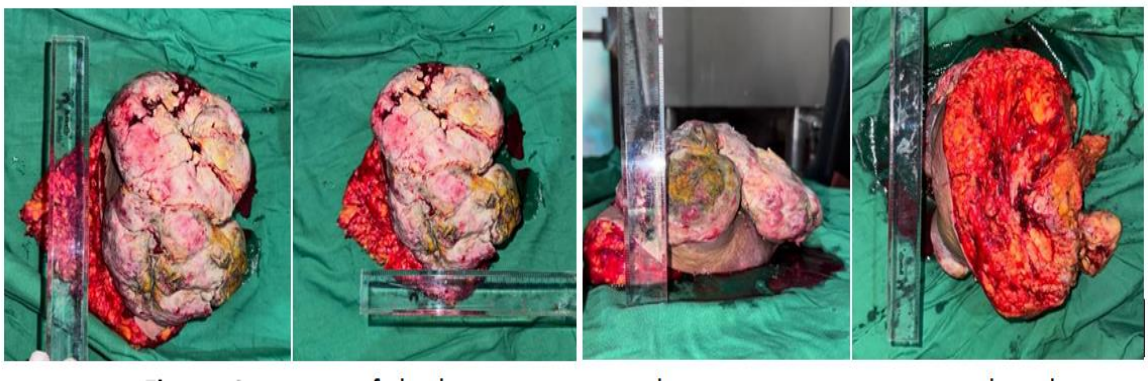

Figure 4: Images of the breast specimen show measuring 17.5 cm in length (A), Images of the breast specimen show measuring 14.0 cm in width (B) the lesion occupied the entire breast show measuring 10.0 cm in height (C), and the tumor base exhibited both cystic and solid components (D). Published with Permission.

After the patient underwent a modified radical mastectomy procedure, the patient received an injection of painkiller ketorolac 30 mg / 8 hours and an injection of antibiotic Ampicillin Sulbactam 1.5 gr/ 12 hours. The patient was recovered well for a two in treatment ward. After complaints of post-operative pain reduced, condition stabilized, and drain products less than 50 cc, the patient was outward and drain removed. The patient was scheduled for control at the Surgical Oncology Clinic.

Discussion

According to the 5th edition of the WHO Classification of Breast Tumors, papillary neoplasms of the breast represent a heterogeneous group of conditions, including benign papilloma, intraductal papillary carcinoma, as well as Encapsulated Papillary Carcinoma (EPC), Solid Papillary Carcinoma (SPC), and Invasive Papillary Carcinoma (IPC) **[12,13].** IPC is the rarest subtype, distinguished by a predominantly (>90%) papillary infiltrative component **[8,14,15].** Compared to other papillary neoplasms, IPC exhibits unique clinical and histological features. However, the absence of large-scale epidemiological studies presents significant challenges for clinical management, impacting both histological diagnosis and treatment strategies **[16].** In this case, the patient was a 48-year-old premenopausal woman with a mass located in covers all quadrants of the right breast, occasionally causing pain. Preoperative imaging and postoperative examination of the gross specimen revealed multiple cystic-solid lesions within the breast that had merged together. Assessing tumors with cystic components can be challenging due to their large size, which may lead to overestimation of the tumor's extent. Hence, careful evaluation of any solid components is essential for accurate diagnosis and management.

To the best of our knowledge, this study represents the first report to highlight three key characteristics of IPC: First, it documents the largest IPC case to date, with a tumor diameter exceeding 17.5 cm. Second, despite the patient's prolonged disease history, substantial tumor burden, and skin involvement, no axillary lymph node metastasis was detected, suggesting the relatively favorable pathological features and biological behavior of IPC. On a

microscopic level, invasive papillary breast carcinoma demonstrates an infiltrative growth pattern, with papillary structures making up over 90% of the invasive area **[17,18].** These papillary formations are composed of a fibrovascular core encased by hyperplastic luminal epithelial cells (**Figure 5).** In comparison, Solid Papillary Carcinoma (SPC) presents a more compact arrangement with a tighter fibrovascular core **[19].** The epithelial cells in SPC tend to be densely clustered, exhibit pale cytoplasmic staining, and show minimal mitotic activity. Based on the Nottingham Histologic Grading system, the majority of these cells fall under grade 2 **[20].**

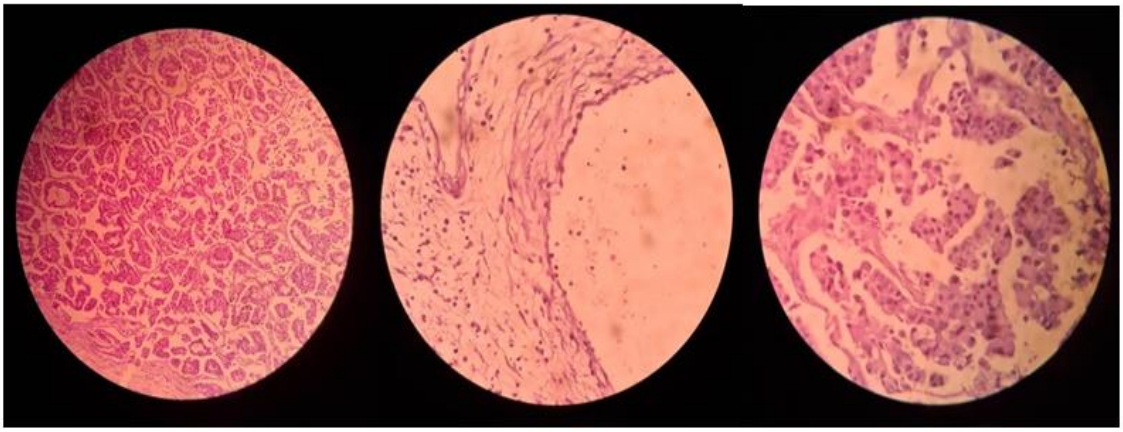

Figure 5: Broad papillary structure with a central fibrovascular core (HE stain, ×200 original magnification).

It is also common to observe apocrine metaplasia or apocrine secretions alongside these characteristics. Breast cancers featuring papillary architecture are typically positive for Estrogen Receptors (ER) and negative for human epidermal growth factor receptor 2 (HER2), except in cases such as tall cell carcinoma with reversed polarity and mucinous cystadenocarcinoma **[21,22].** Classic IPC is marked by strong expression of both ER and Progesterone Receptors (PR), no HER2 gene amplification, and a low proliferation rate as indicated by the Ki-67 index **[1,23].** Lastly, the patient was no signs of recurrence or metastasis observed during a 1-year follow-up period. The treatments for invasive breast carcinoma are generally divided into two main categories: local and systemic therapies. Local treatment involves surgery and radiation therapy. Surgical options include lumpectomy and mastectomy (which can be partial, total, or modified). Radiation therapy is typically recommended following breast-conserving surgeries, such as lumpectomy and partial mastectomy, to reduce the risk of recurrence **[24].** Systemic treatments encompass chemotherapy, hormonal therapy, and targeted therapies **[24].** Papillary breast cancers are commonly positive for Estrogen Receptors (ER) and Progesterone Receptors (PR), making them responsive to hormonal therapy. Most cases of papillary carcinoma are low-grade, slow-growing tumors with a favorable prognosis and high recovery rates. These cancers typically exhibit limited aggressive behavior, and many do not spread

significantly beyond their original site of development [25].

Conclusion

In conclusion, invasive papillary breast carcinoma is a rare form of breast cancer, with its favorable prognosis largely attributed to distinct pathological characteristics and biological behavior. Ensuring an accurate diagnosis and avoiding overtreatment are essential for effective clinical management. Given the limited clinical data and the lack of standardized treatment guidelines, healthcare providers must approach each case with caution and tailor treatment plans to the individual needs of the patient. We recommend modified radical mastectomy is recommended procedure for invasive papillary breast carcinoma. This paper is the first report on the successful treatment of invasive papillary breast carcinoma treated by modified radical mastectomy without complication.

References

1. Wang S, Zhang Q, Mao X. Invasive papillary carcinoma of the breast. Front Oncol. 2024:14:1374091.
2. Issar P, Ravindranath M, Dewangan M. Invasive papillary carcinoma of the breast: a rare case report. Egypt J Radiol Nucl Med. 2021;52:253.
3. Jorns JM. Papillary lesions of the breast: A practical approach to diagnosis. Arch Pathol Lab Med. 2016;140(10):1052-9.
4. Kang HJ, Kwon SY, Kim A, Kim WG, Kim EK, Kim AR, et al. A multicenter study of interobserver variability in pathologic diagnosis of papillary breast lesions on core needle biopsy with WHO classification. J Pathol Transl Med. 2021;55:380–7.
5. Rehman B, Mumtaz A, Sajjad B, Urooj N, Khan SM, Zahid MT, et al. Papillary carcinoma of breast: clinicopathological characteristics, management, and survival. Int J Breast Cancer. 2022;2022:5427837.
6. MacColl C, Salehi A, Parpia S, Hodgson N, Ramonas M, Williams P. Benign breast papillary lesions diagnosed on core biopsy: upgrade rate and risk factors associated with Malignancy on surgical excision. Virchows Arch. 2019;475:701–7.
7. Muttarak M, Lerttumnongtum P, Chaiwun B, Peh WCG. Spectrum of papillary lesions of the breast: clinical, imaging, and pathologic correlation. AJR Am J Roentgenol. 2008;191:700–7.
8. Eiada R, Chong J, Kulkarni S, Goldberg F, Muradali D. Papillary lesions of the breast: MRI, ultrasound, and mammographic appearances. AJR Am J Roentgenol. 2012;198(2):264-71.
9. Pal SK, Lau SK, Kruper L, Nwoye U, Garberoglio C, Gupta RK, et al. Papillary carcinoma of the breast: an overview. Breast Cancer Res Treat. 2010;122(3):637-45.
10. Anderson WF, Chu KC, Chang S, Sherman ME. Comparison of age-specific incidence rate patterns for different histopathologic types of breast carcinoma. Cancer Epidemiol Biomarkers Prev. 2004;13(7):1128-35.
11. Liu ZY, Liu N, Wang YH, Yang CC, Zhang J, Lv SH, et al. Clinicopathologic characteristics and molecular subtypes of invasive papillary carcinoma of the breast: a

large case study. J Cancer Res Clin Oncol. 2013;139(1):77-84.
12. Rehman B, Mumtaz A, Sajjad B, Urooj N, Khan SM, Zahid MT, et al: Papillary carcinoma of breast: Clinicopathological characteristics, management, and survival. Int J Breast Cancer. 2022:54278372022.
13. Elghobashy M, Jenkins S, Shulman Z, O'Neil A, Kouneli S, Shaaban AM. Tall Cell Carcinoma with Reversed Polarity: Case Report of a Rare Special Type of Breast Cancer and Review of the Literature. Biomedicines. 2023;11(9):2376.
14. Rakha EA, Ellis IO. Diagnostic challenges in papillary lesions of the breast. Pathology. 2018;50(1):100-110.
15. Dugandzija T, Sekerija M, Hinic N, Rajcevic S, Kusturica MP. Trend analyses of breast cancer incidence and mortality in Vojvodina. J BUON. 2020;25(2):655-661.
16. Dugandzija T, Sekerija M, Hinic N, Rajcevic S, Kusturica MP. Trend analyses of breast cancer incidence and mortality in Vojvodina. J BUON. 2020;25(2):655-661.
17. Brogi E, Krystel-Whittemore M. Papillary neoplasms of the breast including upgrade rates and management of intraductal papilloma without atypia diagnosed at core needle biopsy. Mod Pathol. 2021;34:78–93.
18. Kulka J, Madaras L, Floris G, Lax SF. Papillary lesions of the breast. Virchows Arch. 2022;480:65–84.
19. Saremian J, Rosa M. Solid papillary carcinoma of the breast: a pathologically and clinically distinct breast tumor. Arch Pathol Lab Med. 2012;136:1308–11.
20. Kelten Talu C, Yeni Erdem B, Arslan E, Nazli MA, Cakir Y, Can Trabulus D. The clinicopathologic features of 22 cases with primary invasive papillary carcinoma of the breast identified in 1153 cases with invasive breast carcinoma: single-center experience. Eur J Breast Health. 2022;18:360–70.
21. Elghobashy M, Jenkins S, Shulman Z, O'Neil A, Kouneli S, Shaaban AM. Tall cell carcinoma with reversed polarity: case report of a rare special type of breast cancer and review of the literature. Biomedicines. 2023;11:2376.
22. Koenig C, Tavassoli FA. Mucinous cystadenocarcinoma of the breast. Am J Surg Pathol. 1998;22:698–703.
23. Huang K, Appiah L, Mishra A, Bagaria SP, Gabriel ME, Misra S. Clinicopathologic characteristics and prognosis of invasive papillary carcinoma of the breast. J Surg Res. 2021;261:105–12.
24. https://stanfordhealthcare.org/en/medical-clinics/breast-cancer-program.html
25. Pervez S, Khan H. Infiltrating ductal carcinoma breast with central necrosis closely mimicking ductal carcinoma in situ (comedo type): a case series. J Med Case Rep. 2007;1:83.

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