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Advancements in Clinicopathologic Assessment and Prognostication of Breast Ductal Carcinoma-in-Situ (DCIS)

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Abstract

Breast ductal carcinoma-in-situ (DCIS) represents a critical stage in the spectrum of breast cancer, characterized by abnormal cell growth confined within the breast ducts. Although DCIS is non-invasive by definition, it has the potential to progress to invasive breast cancer if left untreated, making accurate prognostication and treatment selection paramount in clinical management. Among the various treatment modalities available for DCIS, breast-conserving surgery (BCS) has emerged as a standard approach, aimed at excising the tumor while preserving the breast. However, the optimal management strategy post-BCS hinges on a comprehensive evaluation of clinicopathologic features that can predict the risk of disease recurrence and guide therapeutic decisions.

Keywords: Tumor size; Histological grade; Hormone receptor status; HER2 status; Comedonecrosis; Margin status

Introduction

Over the years, significant strides have been made in understanding the clinicopathologic characteristics of DCIS and their prognostic significance in patients undergoing BCS. These advancements have been instrumental in refining risk stratification algorithms and tailoring individualized treatment plans to optimize patient outcomes. Here, we delve deeper into the evolving landscape of clinicopathologic assessment in DCIS and its implications for prognostication and therapeutic decision-making. Histological grading, based on architectural patterns and cytological features of the tumor cells, remains a cornerstone of DCIS assessment. High-grade DCIS is associated with a greater likelihood of disease recurrence and progression to invasive carcinoma compared to low or intermediate-grade lesions [1-3].

Methodology

Recent molecular studies have elucidated the underlying genomic alterations driving DCIS progression, providing insights into the molecular heterogeneity of these lesions and their potential impact on clinical behavior. The expression of hormone receptors (estrogen receptor (ER) and progesterone receptor (PR)) and human epidermal growth factor receptor 2 (HER2) statuses plays a pivotal role in guiding treatment decisions and predicting response to therapy in DCIS [4,5]. Hormone receptor-positive DCIS is often amenable to endocrine therapy, while HER2-positive disease may benefit from targeted agents such as trastuzumab. Additionally, advancements in molecular profiling techniques have facilitated the identification of novel biomarkers associated with disease aggressiveness and therapeutic response, offering new avenues for personalized medicine in DCIS [6,7]. Comedonecrosis, characterized by central necrosis of tumor cells within the ductal structures, is a histopathologic feature of DCIS associated with an increased risk of disease recurrence and invasive carcinoma development. The tumor microenvironment, including stromal and immune cell infiltration, also plays a crucial role in modulating tumor behavior and response to therapy in DCIS. Understanding the dynamic interplay between tumor cells and the microenvironment holds promise for identifying novel prognostic markers and therapeutic targets in DCIS. Achieving negative surgical margins, defined as the absence of tumor cells at the inked margin, is paramount in reducing the risk of local recurrence following BCS in DCIS. Close or positive margins necessitate additional interventions such as re-excision or adjuvant radiotherapy to ensure adequate disease control [8,9]. Recent advancements in imaging modalities and intraoperative techniques have enhanced margin assessment accuracy and facilitated more precise surgical planning, thereby optimizing oncologic outcomes in DCIS patients undergoing BCS. The integration of clinicopathologic features into multidisciplinary treatment algorithms is essential for tailoring individualized management strategies in DCIS. Risk stratification models incorporating histological grading, biomarker expression, and other clinicopathologic parameters help identify patients at higher risk of disease recurrence who may benefit from more aggressive therapeutic interventions. Moreover, ongoing efforts to validate and refine these predictive models will further enhance their utility in clinical practice and improve patient outcomes [10].

Discussion

Breast ductal carcinoma-in-situ (DCIS) poses unique challenges in clinical management due to its non-invasive nature and variable risk of progression to invasive breast cancer. In this discussion, we have highlighted the importance of understanding both clinicopathologic features and treatment variables in guiding therapeutic decisions and prognostication for patients with DCIS. The clinicopathologic features of DCIS, including tumor size, histological grade, hormone receptor status, HER2 status, comedonecrosis, margin status, and lymphovascular invasion, provide valuable insights into disease biology and prognosis. High-grade lesions, larger tumor size, positive hormone receptor status, and presence of comedonecrosis are associated with an increased risk of recurrence and progression to invasive disease. Margin status, particularly achieving negative surgical margins, is crucial in reducing the risk of local recurrence following breast-

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conserving surgery (BCS). Incorporating these clinicopathologic features into risk stratification models enables clinicians to identify patients at higher risk of disease recurrence who may benefit from more aggressive treatment strategies. Treatment variables, including surgery, radiotherapy, endocrine therapy, anti-HER2 therapy, and participation in clinical trials, play a pivotal role in the management of DCIS. Breast-conserving surgery remains the cornerstone of treatment, aiming to remove the cancerous tissue while preserving the breast. Adjuvant radiotherapy following BCS reduces the risk of local recurrence, particularly in patients with high-risk features such as positive margins or large tumor size. Hormone receptor-positive DCIS may benefit from adjuvant endocrine therapy to reduce the risk of recurrence, while HER2-positive DCIS may be treated with targeted anti-HER2 therapies. Participation in clinical trials evaluating novel treatment modalities offers potential opportunities to improve outcomes and advance scientific knowledge in DCIS management. Optimal management of DCIS requires a multidisciplinary approach, involving collaboration between surgeons, medical oncologists, radiation oncologists, pathologists, and other healthcare professionals. Multidisciplinary tumor boards facilitate comprehensive evaluation of clinicopathologic features and treatment variables, ensuring individualized treatment recommendations tailored to each patient's unique characteristics and preferences.

Conclusion

In conclusion, understanding both clinicopathologic features and treatment variables is essential for effective management and prognostication in patients with breast ductal carcinoma-in-situ. By integrating clinicopathologic features into risk stratification models and considering treatment variables in a multidisciplinary framework, clinicians can optimize therapeutic approaches to minimize the risk of disease recurrence and improve long-term outcomes for patients with DCIS. Continued research efforts are warranted to refine risk stratification algorithms, identify novel predictive biomarkers, and explore emerging treatment modalities, ultimately advancing our understanding and management of this complex disease.

References

1. Bluekens AMJ, Holland R, Karssemeijer N, Broeders MJM, den Heeten GJ, et al. (2012) Comparison of digital screening mammography and screen-film mammography in the early detection of clinically relevant cancers: A multicenter study. Radiology 265: 707-714.
2. Ginsburg O, Yip CH, Brooks A, Cabanes A, Caleffi M, et al. (2020) Breast cancer early detection: A phased approach to implementation. Cancer 126: 2379
3. Pashayan N, Antoniou AC, Ivanus U, Esserman LJ, Easton DF, et al. (2020) Publisher Correction: Personalized early detection and prevention of breast cancer: ENVISION consensus statement. Nat Rev Clin Oncol 17: 716.
4. La Vecchia C, Negri E, Carioli G (2022) Progress in cancer epidemiology: Avoided deaths in Europe over the last three decades. Eur J Cancer Prev 31: 388-392.
5. Ouédraogo S, Dabakuyo TS, Gentil J, Poillot M.L, Dancourt V, et al. (2013) Attending breast cancer screening alone does not explain the detection of tumours at an early stage. Eur J Cancer Prev 22: 103-111.
6. Trimboli RM, Giorgi Rossi P, Battisti NML, Cozzi A, Magni V, et al. (2020) Do we still need breast cancer screening in the era of targeted therapies and precision medicine? Insights Imaging 11:105.
7. Park TS, Hwang ES (2016) Current trends in management of Ductal Carcinoma In Situ. Oncology 30: 823-831.
8. Neal CH, Joe AI, Patterson SK, Pujara AC, Helvie MA Digital (2021) mammography has persistently increased high-grade and overall DCIS detection without altering upgrade rate. AJR Am J Roentgenol 216: 912-918.
9. Van Bockstal MR, Agahozo MC, Koppert LB, Deurzen CH (2020) A retrospective alternative for active surveillance trials for ductal carcinoma in situ of the breast. Int J Cancer 146: 1189-1197.
10. Poiseuil M, Moutel G, Cosson M, Quertier MC, Duchange N (2023) Participation in breast cancer screening and its influence on other cancer screening invitations: Study in women aged 56 years old in four French departments. Eur J Cancer Prev.