

Ductal Carcinoma In Situ of the breast: Potential to metastasize?

A nationwide cancer registry-based study

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Background

Ductal Carcinoma in Situ (DCIS) is traditionally viewed as malignant cells confined to breast ducts, with no metastatic potential. However, reports of sentinel lymph node metastases (SN+) in DCIS challenge this view. This study investigates whether registered DCIS SN+ reflects limitations in registration or missed invasive breast cancer (IBC).

Methods

Nationwide data on women with DCIS SN+ (2005-2021) from the Netherlands Cancer Registry and the Dutch Pathology Databank were curated and pathology data was reviewed regarding history of DCIS, IBC, or other malignancies. Cases with registration errors, DCIS mixed with other lesion types, or diagnostic uncertainties were excluded. Three pathologists reviewed tissue of eligible cases to assess IBC and SN status, and immunohistochemical staining (CK 5/6 or CK 8/18) was performed.

Results

Among 30,863 DCIS cases, 16,070 (52%) underwent SN biopsy, with SN+ registered in 454 (3%) cases. Of these, 47 (10%) had macrometastases (>2 mm), 78 (17%) had micrometastases (0.2–2 mm), and 329 (73%) had isolated tumor cells (≤ 0.2 mm). Pathology review excluded 273 (60%) cases due to registration errors ($n=44$), mixed DCIS ($n=147$), and diagnostic uncertainties ($n=82$). Tissue of 46/125 cases with macro- and micrometastases was reviewed. Despite CK 5/6 staining for 38 cases, diagnostic uncertainty persisted due to factors such as tissue section and observer variability, suboptimal tissue quality and availability. Ultimately, three cases were classified as primary IBC, 16 as pure DCIS, while 27 others remained inconclusive.

Conclusions

Our study indicates that DCIS in itself has minimal to no metastatic potential. Ongoing clonality analysis of 9 cases with macrometastases aims to determine whether the SN metastases are clonally related to the DCIS lesions.