Comparative analysis of second primary malignancies in invasive lobular versus ductal breast carcinoma: A SEER-based study

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Background

- Invasive ductal carcinoma (IDC) and invasive lobular carcinoma (ILC) are the two most common histologic subtypes of breast cancer (BC), with IDC accounting for approximately 70–80% of cases and ILC comprising 10–15%.
- Improved screening and advances in breast cancer treatment have increased survivorship but also heightened the risk of second primary malignancies (SPMs) among long-term survivors.
- Our study presents a comparative analysis of the types of SPMs among ILC and IDC survivors.

Methods

- Using the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) 8 database registry, we identified a cohort of female patients diagnosed with ILC and IDC between 1975 and 2022.
- We analyzed the incidence of SPM using the SEER*Stat Multiple Primary-Standardized Incidence Ratio (MP-SIR) session for the overall cohort of females with ILC and IDC. The cohort was further stratified by age (< 40 years and >/= 40 years).
- Standardized incidence ratios (SIRs) were calculated to compare the observed rates with the expected rates between ILC/IDC and the general population.

Site of SPM	ILC O/E (95% CI)	IDC O/E (95% CI)
Common Sites		
Soft Tissue	1.72 (1.31-2.22)	1.55 (1.41-1.69)
Thyroid	1.42 (1.20-1.66)	1.22 (1.16-1.29)
Skin (excluding basal/squamous)	1.19 (1.07-1.33)	1.06 (1.02-1.10)
Acute Myeloid Leukemia	1.90 (1.55-2.30)	1.78 (1.67-1.90)
Unique to ILC		
Stomach	1.58 (1.33-1.86)	-
Melanoma of the Skin	1.18 (1.05-1.32)	-
Unique to IDC		
Salivary Gland	-	1.65 (1.44-1.87)
Esophagus	-	1.19 (1.08-1.30)
Pleura	-	2.86 (1.43-5.11)
Lung and Bronchus	-	1.02 (1.00-1.14)

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Results

- Both ILC and IDC had an increased risk of all types of SPMs, with SIR of 1.09 (95% CI: 1.06-1.11) for ILC and 1.14 (95% CI: 1.14-1.15) for IDC.
- Sites for SPM unique to ILC include mainly the stomach, and melanoma of the skin.
- Sites for SPM unique to IDC with include salivary gland, oral cavity and pharynx, tongue, esophagus, pleura, peritoneum, lung and bronchus, bones and joints, corpus uteri, and acute lymphocytic leukemia (Table).
- Greater incidence of SPMs was observed for patients age < 40 for both ILC and IDC (ILC: age < 40 SIR = 1.84 vs age >/= 40 SIR = 1.08; IDC: age < 40 SIR = 1.98 vs age >/= 40 SIR = 1.11).
- For ILC, SPM with involvement of stomach is seen in cohort of both age categories but did not reach statistical significance for age < 40 (age < 40: SIR = 4.22, CI 0.87-12.33; age >/= 40: SIR = 1.56, CI 1.31-1.84)

Conclusion

- Our study provides a detailed understanding of the variation in the pattern of SPMs for both ILC and IDC. Patients with ILC exhibited a higher propensity to develop SPM at specific sites, such as the stomach and skin melanoma, highlighting the need for further investigation into the underlying biological mechanisms..
- These findings underscore the importance of a tailored surveillance strategy based on histological subtype.