Analysis of prognosis in different subtypes of invasive lobular carcinoma using a National Cancer Database Breast Cancer Registry of Japan

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Background

Invasive lobular carcinoma (ILC) has more likely to be hormone receptor (HR) positive, and several studies reported that the prognosis of ILC was better than invasive ductal carcinoma (IDC) [1].

However, ILC also has different prognosis according to the subtypes as IDC does[2], and better prognosis of ILC might depend on their high HR positivity.

Additionally, there are many reports that chemotherapy (CT) does not improve the prognosis of ILC due to the high positivity of HR [3].

ILC usually constitutes small population of invasive breast cancer [1], therefore, the data from multiple institutions is needed for more accurate analyses.

The National Clinical Database (NCDB) is a platform for nationwide cancer registry in Japan. It contains records of more than 300,000 breast cancer patients from more than 800 institutions in Japan.

Objectives

- To compare the prognosis of IDC and ILC in each subtype
- To assess the effect of CT on luminal ILC

Study design

Analysis of the prognosis in IDC and ILC

- Inclusion criteria
  - IDC or ILC
- Do not have distant metastasis
- Received surgery for primary breast cancer
- Did not receive preoperative therapy
- Do not have bilateral breast cancer
- The cases with 10-year follow-up data

Results

To evaluate the prognosis of each subtype, we compared DFS and OS for IDC and ILC in matched cohort.

The analysis of 10-year OS showed similar results, and there were no differences in the OS of luminal HER2, HER2, and TN cohorts between ILC and IDC. However, ILC had worse OS than IDC in luminal cohort (85.99% vs 89.19%, p<0.01). (Figure 3)

In pT2N0 cohort, there was no statistical differences in the 10-year DFS and OS between the ET+CT and ET only group (DFS: ET+CT 82.12% vs ET only 87.35% (p=0.34), OS: ET+CT 93.48% vs ET only 94.84% (p=0.99). (Figure 4)

In pT2N1 cohort, the ET only group had poor OS (ET+CT 77.03% vs ET only 54.17% (p=0.01)). (Figure 4)

In the analysis by each subtype, there was no statistical difference in DFS for luminal HER2, HER2, and TN cohorts, however luminal ILC had statistically poor DFS than luminal IDC (78.04% vs 81.17%, p<0.01). (Figure 1)

In pT1-2N1 cohort, the ET only group tended to have poor DFS (ET+CT 77.03% vs ET only 54.17% (p=0.34)). The ET only group had poor OS (ET+CT 94.81% vs ET only 61.96% (p=0.01)). (Figure 4)

For luminal IDC, there was no significant difference in DFS for hormone receptor negative (HR-) and positive (HR+) patients (p=0.73). (Figure 5)

Analysis of the effect of CT in luminal ILC

- Inclusion criteria
  - Safely above criteria
  - Luminal ILC with pT2N0 or pT1-2N1M0
  - Received adjuvant chemotherapy

- To evaluate the effect of CT in luminal ILC, we compared DFS and OS for ET+CT group and ET only group in luminal ILC.

Because it was presumed that there are differences in pathological and clinical characteristics, we have planned to make the matched cohorts by using exact matching for comparing their prognosis.

DFS was defined as the time from surgery to local or distant recurrence or death from any cause. OS was defined as the time between the surgery and the death from any cause.

Pearson's Chi squared test was used to identify the characteristics. Survival curves were constructed by Kaplan-Meier method and were compared by log-rank test. All analyses were conducted using SAS version 9.4 (SAS Institute, Cary, NC, USA).

Table 1: Patient characteristics of IDC and ILC (matched cohort)

Table 2: Patient characteristics of ILC in each subgroup

Figure 1: Prognosis of overall population

Figure 2: DFS in each subgroup

Figure 3: OS in each subgroup

Conclusion

Although luminal HER2, HER2 and TN cohorts had no difference in the prognosis between IDC and ILC, luminal ILC had a poor prognosis than luminal IDC. Therefore, luminal ILC needs stronger approach to improve their prognosis. And it was suggested that chemotherapy is effective for recurrent high-risk luminal ILC such as those with positive lymph node metastasis.

References


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