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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 (NCD) 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

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

Analysis of the effect of CT in luminal ILC

✓ Inclusion criteria
- Satisfy above criteria
- Luminal ILC with pT2N0M0 or pT1-2N1M0
- Received endocrine therapy (ET)

✓ 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.
- Peason'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).

Table1: Consort diagram of this study

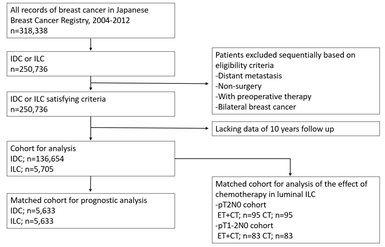


Table2: Patient characteristics of IDC and ILC (matched cohort)

	IDC		ILC	
	n	%	n	%
Total	5633		5633	
Age				
<40	152	2.70	152	2.70
<60	2673	47.45	2673	47.45
<80	2407	42.73	2407	42.73
80 and above	401	7.12	401	7.12
Menopause status				
Menopause	3702	65.72	3702	65.72
Pre menopause	1750	31.07	1750	31.07
Unknown	181	3.21	181	3.21
Tumor size				
<2cm	2280	40.48	2280	40.48
2cm-, <5cm	2612	46.37	2612	46.37
5cm-	534	9.48	534	9.48
Unknown	207	3.67	207	3.67
ER				
Positive	4910	87.16	4910	87.16
Negative	566	10.05	566	10.05
Not administered	138	2.45	149	2.65
No information	19	0.34	8	0.14
PgR				
Positive	3793	67.34	3793	67.34
Negative	1678	29.79	1678	29.79
Not administered	142	2.52	154	2.73
No information	20	0.36	8	0.14
HER2				
Positive	304	5.40	304	5.40
Negative	4845	86.01	4845	86.01
Not administered / No information	484	8.59	484	8.59
Lymph node status				
None	3561	63.22	3561	63.22
1 to 3	1152	20.45	1152	20.45
4 to 9	373	6.62	373	6.62
10 and above	340	6.04	340	6.04
Not administered / No information	207	3.67	207	3.67
Initial surgical treatment				
Mastectomy	3053	54.20	3053	54.20
Breast-conserving surgery	2580	45.80	2580	45.80

Results

Figure1: Prognosis of overall population

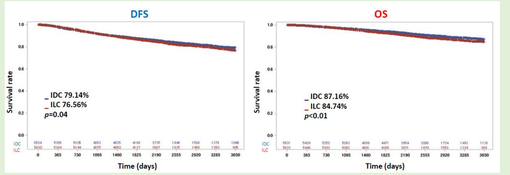


Figure2: DFS in each subgroup

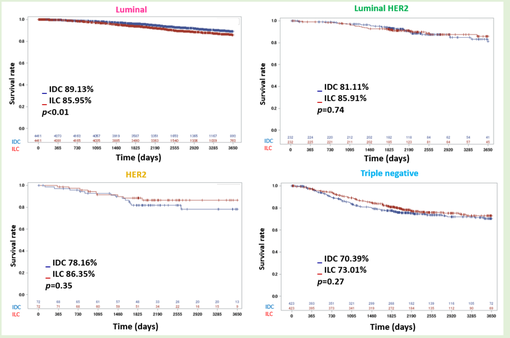


Figure3: OS in each subgroup

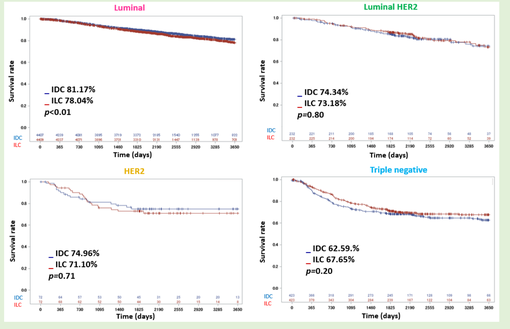
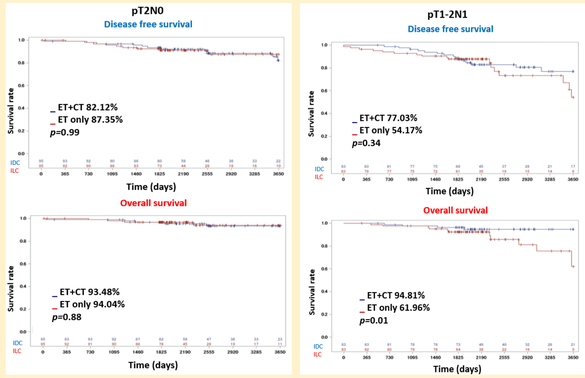


Table3: Patient characteristics of pT2N0 and pT1-2N1 patients in ILC (matched cohort)

	pT2N0				pT1-2N1			
	ET+CT		ET only		ET+CT		ET only	
	n	%	n	%	n	%	n	%
Total	95		95		83		83	
Age(years)								
<20	0	0.00	0	0.00	0	0.00	0	0.00
20-29	0	0.00	0	0.00	0	0.00	0	0.00
30-39	2	2.11	2	2.11	2	2.41	2	2.41
40-49	23	24.21	23	24.21	28	33.73	28	33.73
50-59	23	24.21	23	24.21	24	28.92	24	28.92
60-69	29	30.53	29	30.53	21	25.30	21	25.30
70-79	16	16.84	16	16.84	8	9.64	8	9.64
80-	2	2.11	2	2.11	0	0.00	0	0.00
Menopause status								
Menopause	63	66.32	63	66.32	46	55.42	46	55.42
Premenopause	32	33.68	32	33.68	37	44.58	37	44.58
Tumor size								
<2cm	0	0.00	0	0.00	20	24.10	20	24.10
2cm-	95	100.00	95	100.00	63	75.90	63	75.90
ER								
Positive	95	100.00	95	100.00	83	100.00	83	100.00
Negative	0	0.00	0	0.00	0	0.00	0	0.00
PgR								
Positive	68	71.58	68	71.58	72	86.75	72	86.75
Negative	27	28.42	27	28.42	11	13.25	11	13.25
Radiotherapy								
Yes	1	1.05	1	1.05	4	4.82	4	4.82
No	94	98.95	94	98.95	79	95.18	79	95.18

Figure4: Prognosis of pT2N0 and pT1-2N1 patients in ILC



- In overall subtypes, the 10-year DFS of ILC was poor than those of IDC (76.56% vs 79.14%, p=0.04). (Figure1)
- 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 significant poor DFS than luminal IDC (78.04% vs 81.17%, p<0.01). (Figure2)
- 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 (85.95% vs 89.13%, p<0.01). (Figure3)
- 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=0.99), OS: ET+CT 93.48% vs ET only 94.04% (p=0.88)). (Figure4)
- 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 compared to the ET+CT group (ET+CT 94.81% vs ET only 61.96%(p=0.01)). (Figure4)

Conclusions

Although luminal HER2, HER2 and TN cohorts had no differences in prognosis between ILC and IDC, 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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Acknowledgments

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