No. 4103

Comprehensive Support Project

Phase III two by two factorial comparison of Doxorubicin and Cyclophosphamide followed by a taxane vs. a taxane alone, and Paclitaxel vs. Docetaxel in operable node positive breast cancer - results of the first interim analysis of N-SAS BC02 trial, Japan.

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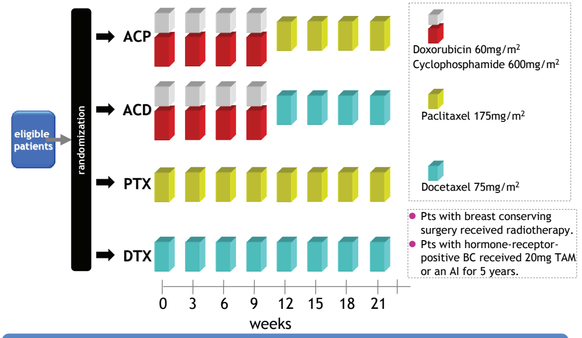
Objectives and Endpoints

- To verify whether **8 cycles of a taxane** is not inferior to **4 cycles of Doxorubicin /Cyclophosphamide (AC) followed by 4 cycles of a taxane** given every three weeks in terms of survival
- To compare disease-free survival and overall survival between **Docetaxel (75 mg/m²) (DTX)** and **Paclitaxel (175 mg/m²) (PTX)** given every three weeks
- To compare health-related quality of life (HRQOL), adverse events, and medical cost performance between **8 cycles of a taxane** and **4 cycles of AC followed by 4 cycles of a taxane**
- To compare HRQOL, adverse events and cost/performance between **DTX** and **PTX**
- To explore the association of HER2 expression with a benefit from the addition of AC

Study Design



Eligibility Criteria

1. Female patients with stage I to IIIA histologically confirmed adenocarcinoma of the breast
2. Histologically involved lymph nodes as confirmed by axillary lymph-node dissection or sentinel-node biopsy
3. Age 18 to 75 years
4. PS(ECOG) 0, 1
5. Prior treatment:
   1. ≤ 84 days from breast surgery and/or axillary dissection
   2. Postoperative radiotherapy given after the assigned regimen of chemotherapy
   3. No prior chemotherapy or hormonal therapy
6. Adequate organ function:
   WBC ≥ 4,000/mm³ or neutrophil ≥ 2,000/mm³, platelet ≥ 100,000/mm³
   Total bilirubin ≤ 1.5mg/dL, ALT ≤ 2.5 × the upper limits of normal
   Creatinine ≤ 1.5mg/dL
7. Written informed consent

Patient Disposition

Patients randomly assigned (n=1060)			
ACP 263	ACD 265	PTX 267	DTX 265
Patients eligible for this trial (n=1060)			
ACP 263	ACD 265	PTX 267	DTX 265
Patients analyzed for safety and efficacy (n=1044)			
ACP 260	ACD 262	PTX 263	DTX 259
Patients completed protocol therapy (n=902)			
ACP 227	ACD 226	PTX 228	DTX 221

Did not receive protocol therapy (n= 16)			
ACP 3	ACD 3	PTX 4	DTX 6

Did not complete protocol therapy (n= 142)			
ACP 33	ACD 36	PTX 35	DTX 38

Patients enrollment : December 2001 – April 2006
Number of participating institution: 84
Date of the first interim analysis: June 15 2008

Demographics and Baseline Characteristics

	ACP (n=260)	ACD (n=262)	PTX (n=263)	DTX (n=259)
Age (mean±sd)	52.8±8.3	52.7±9.5	52.4±8.7	51.9±8.6
Stage				
I	42	18	29	35
II A	95	115	102	103
II B	85	106	109	97
III A	38	23	23	24
Pathological tumor size				
˚ 3cm	168	167	167	165
≥ 3cm	92	95	96	94
Number of positive lymph node				
1 - 3	154	158	156	154
4 - 9	63	61	64	64
10 -	43	43	43	41

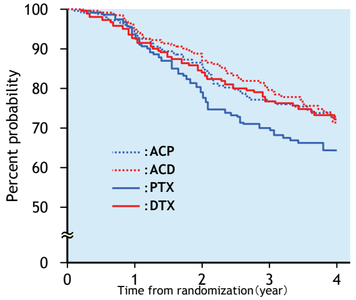
	ACP (n=260)	ACD (n=262)	PTX (n=263)	DTX (n=259)
Estrogen Receptor				
positive	147	144	147	144
negative	110	116	111	112
not tested	3	2	5	3
Progesterone Receptor				
positive	107	122	109	113
negative	149	138	147	142
unknown	4	2	5	4
Type of surgery				
Breast Conserving Surgery	121	121	122	121
Mastectomy	135	140	139	136
Others	4	1	2	2
HER2 (HercepTest®)				
0	85	77	91	90
1+	76	68	63	61
2+	24	26	29	27
3+	35	36	35	34
unknown	40	55	45	47

Grade 3-4 Adverse Events (%)

	ACP	ACD	PTX	DTX
Neutropenia	17	18	2	6
Leukopenia	3	5	0	2
Thrombocytopenia	0	0	0	0
Anemia	0	0	0	0
Febrile neutropenia	**5**	**11**	**0**	**8**
Elevated AST or ALT	2	1	2	0
Elevated bilirubin	0	0	0	0
Edema	**0**	**1**	**0**	**11**
Pleural effusion	0	0	0	0
Ascites	0	0	0	0
Body weight gain	0	0	0	0
Hair loss	0	0	0	0
Phlebitis (injection site)	0	0	0	0
Nail change	0	0	0	0

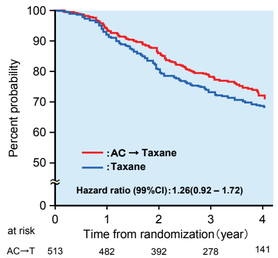
	ACP	ACD	PTX	DTX
Stomatitis	1	1	0	0
Nausea	**5**	**3**	**0**	**1**
Vomiting	**3**	**3**	**0**	**1**
Constipation	1	1	0	0
Diarrhea	0	1	0	2
Urinary urgency	0	0	0	0
Hematuria	0	0	0	0
Fatigue	3	3	2	2
Lacrimation	0	0	0	0
Rash, desquamation	2	1	0	1
Sensory neuropathy	**4**	**0**	**6**	**4**
Motor neuropathy	2	1	1	1
Joint pain (arthralgia)	6	4	8	2
Muscle pain (myalgia)	4	3	5	1

Disease-free Survival

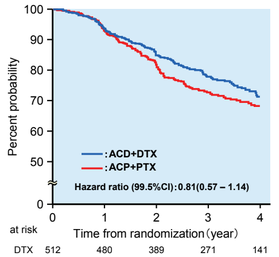


Patients at risk					
ACP	258	239	196	136	66
ACD	255	243	196	142	75
PTX	261	240	180	117	56
DTX	257	237	193	129	66

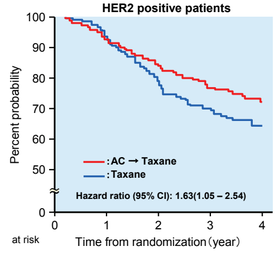
Summary of events (disease-free survival)	ACP	ACD	PTX	DTX
No. of pts	258	255	261	257
Hypothesis 1: A taxane alone is not inferior to AC + a taxane				
Hazard ratio (AC + a taxane as standard)	1.26			
99% CI	0.92 - 1.72			
90% CI	1.03 - 1.53			
p value	0.67			
Hypothesis 2: Whether PTX or DTX is more effective				
Hazard ratio (PTX as standard)	0.81			
99.5% CI	0.57 - 1.14			
95% CI	0.64 - 1.03			
p value	0.08			



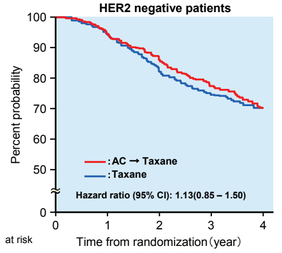
at risk					
AC→T	513	482	392	278	141
Taxane	518	477	373	246	122



at risk					
DTX	512	480	389	271	141
PTX	519	479	376	253	122



at risk					
AC→T	132	123	102	78	35
Taxane	138	120	96	59	30



at risk					
AC→T	381	359	290	200	106
Taxane	380	357	277	187	92

Statistical Consideration

Hypothesis 1: 8 cycles of a taxane is not inferior to 4 cycles of AC followed by 4 cycles of a taxane.

Hypothesis 2: One of the taxanes is superior or equivalent to the other.

To verify these hypotheses, we analyzed disease-free survival as the primary endpoint and overall survival and relapse-free survival as secondary endpoints. To adjust for multiplicity, a two-sided significance level of 0.5% was used to verify superiority, and a one-sided significance level of 0.5% (1% for a two-sided test) was used to verify inferiority.

For the estimation of hazard ratios, these values correspond to calculating a two-sided confidence interval of 99.5% and a two-sided confidence interval of 99%, respectively. For hypothesis 1, if the upper limit of the confidence interval for the hazard ratio with a taxane alone relative to that with AC + a taxane is 1.321 or less, a taxane alone is proven to be equivalent to AC + a taxane. For hypothesis 2, if the confidence interval of the hazard ratio for either taxane is not 1, one of the two taxanes is shown to be superior to the other.

Summary

- **8 cycles of a taxane** is not inferior **to 4 cycles of AC followed by 4 cycles of a taxane** in all analyzed patients in terms of disease-free survival.
- **Docetaxel (75 mg/m²)** is superior to **Paclitaxel (175 mg/m²)** when given every three weeks in terms of disease-free survival.
- Regarding adverse events;
  - Incidence of nausea and vomiting was higher with **4 cycles of AC followed by 4 cycles of a taxane** as compared to **8 cycles of a taxane.**
  - Incidence of edema and febrile neutropenia was higher with **Docetaxel (75 mg/m²)** as compared to **Paclitaxel (175 mg/m²)** .
  - Incidence of sensory neuropathy was higher with **Paclitaxel (175 mg/m²)** as compared to **Docetaxel (75 mg/m²)** .
- In the subset of HER2 positive patients, **4 cycles of AC followed by 4 cycles of a taxane** produced superior DFS as compared with **8 cycles of a taxane**. This is not observed in patients with HER2 negative patients.

Conclusion

- Anthracycline containing regimen can be omitted in certain subsets of postoperative breast cancer patients.
- When given every 3 weeks, **Docetaxel (75 mg/m²)** improves disease-free survival in woman with node positive breast cancer as compared with **Paclitaxel (175 mg/m²)** .
- The expression of HER2 may be associated with a benefit from the addition of Anthracycline containing regimens.

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