including 1,832 consecutive patients treated between 2007 and 2008 to replicate our findings in the first dataset.

Results: A U-shaped relationship (previously observed in two European populations) between age and LN status failed to be replicated in our dataset of Chinese patients. Instead, we observed a linear rather than piecewise relationship. Moreover, the interaction between age and LN involvement was not modified by tumor size. After multivariate adjustment, the linear relationship was still present. The odds of LN involvement decreased by 1.5% for each year increase in age (OR 0.985, 95% CI 0.979–0.991, P < 0.001). Breast cancer subtypes were also associated with LN status. Proportions of basal-like and ERBB2+ subtypes decreased with increasing age. The observations in the first dataset were successfully replicated in a second independent dataset.

Conclusion: We confirmed a straightforward but not piecewise relationship between age and LN status in Chinese patients. The different pattern between Chinese and European elderly patients should be considered when making clinical decisions.

132 Poster

The change of tumour size between diagnosis and surgical treatment in breast cancer patients

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Background: Sometimes, patients who were diagnosed with breast cancer have to wait for surgery because of referral to and delay in tertiary care centers. These waiting time raise concerns for tumor progression. We evaluated the change in tumor size between diagnosis and surgical treatment by ultrasonography (US), and its correlation with upgrade of cancer stage, mastectomy rate, and prognosis. We also evaluated the clinical significance of tumor growth rate (TGR) determined by US in patients.

Materials and Methods: We identified 919 patients who were diagnosed invasive breast cancer from January 2002 to August 2009 in Seoul National University Hospital and who underwent US study at the time of first visit of our institute and at one day before surgery. We compared the change of ultrasonographic tumor size during these intervals. We excluded the patients who underwent neoadjuvant chemotherapy and had size difference of more than 1 cm between the final pathology and the last US before surgery. Disease free survival (DFS) was estimated using the Kaplan-Meier method.

Results: The median time duration from the first imaging study at our center to surgery was 27.5 days (range 8 to 92). The correlation coefficient between the last US and pathologic maximal tumor dimension was 0.906 (p < 0.0001). The median TGR (the change of tumor size in US/day) was 0.0083 cm/day. In a multivariate analysis, larger tumor size at the first imaging (p < 0.001), higher tumor grade (p = 0.01), ER negativity (p = 0.027), lymph node metastasis (p < 0.001), and perivascular invasion (p = 0.016) were significant predictors of higher TGR. There was a weak linear correlation between the time interval and change of tumor size (Pearson r = 0.114; p = 0.001). However, the time interval did not significantly affect the upgrade of T stage (p = 0.345) and mastectomy rate (p = 0.195). There was no difference in DFS between the patients with longer interval time (⩾28 days) and with shorter interval time (<28 days) (p = 0.918). Patients with higher TGR showed significantly worse DFS than patients with lower TGR (p = 0.039).

Conclusion: There was no evidence that longer interval time between diagnosis and surgical treatment leads to upstage, more mastectomy, or worse DFS. High tumor growth rate was a significant indicator for worse prognosis.

133 Poster

HER-2 and Ki-67 co-expression gives more prognostic information in breast cancer

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Introduction: HER-2 and Ki-67 have been extensively investigated on long term outcome of breast cancer. Immunohistochemical positivity of the HER-2 and Ki-67 in breast cancer cells were found associated with worse outcome in most of these studies. We investigated together effect of these markers on breast cancer outcome in this study.

Methods: A 10-year retrospective review was performed using the Breast Cancer Registry data at Akdeniz University Hospital, a tertiary care facility in Antalya, Turkey. A total of 736 patients with invasive breast cancer that underwent surgery between January 1999 and January 2009 were enrolled. The expression of HER-2 and Ki-67 in the tumor was assayed by immunohistochemistry in 406 patients. We accepted cutoff value for Ki-67 >15% and for HER-2 >30%++. Disease free survival (DFS) and overall survival (OS) were analyzed for the relation between conventional prognostic factors, HER-2, Ki-67, HER-2 and Ki-67 co-expression and clinical outcome. Patients follow-up time was median 58 months (range 4 to 128 months). A statistical analysis was performed by log rank test for univariate analysis and cox regression for multivariate analysis with SPSS 13.0 program and p < 0.05 was accepted significant.

Results: There were 65 (16%) distant recurrences and 50 (12%) death due to cancer in study period. Tumor size T status (P < 0.001, P < 0.001), axillary lymph node metastasis (P < 0.001, P < 0.001), axillary node status (P < 0.001, P < 0.001), pathologic stage (P < 0.001, P < 0.001), nuclear grade (P < 0.001, P < 0.001), histological grade (P = 0.001, P < 0.001), estrogen receptor status (P = 0.007, P < 0.001), HER-2 expression (P < 0.001, P < 0.001), Ki-67 expression (P = 0.015, P = 0.036), HER-2 and Ki-67 co-expression (P < 0.001, P = 0.001) were found influence of the DFS and OS by univariate analysis. Tumor size T status (P = 0.035, P < 0.001), axillary node status (P < 0.001, P < 0.001) and HER-2 and Ki-67 co-expression (P < 0.001, P = 0.003) were found independent risk factors for distance recurrence and death due to cancer by cox regression analysis (P value for DFS and OS given respectively). Estrogen receptor status (P = 0.012) were found independent risk factors for death due to cancer and axillary lymph node metastasis (P = 0.005), pathologic stage (P = 0.001), nuclear grade (P = 0.035) were found independent risk factors for distance recurrence. Five years DFS and OS were found 93%, 97% and 69%, 74% for two markers negative and two markers positive patient respectively (Table).

Conclusion: In addition to other conventional pathological factors, tumor growth and proliferation markers, such as HER-2 and Ki-67 predict outcome breast cancer patients. If these two markers are evaluated together, co-expression of both markers influences DFS and OS independent of conventional factors. In conclusion, if HER-2 and Ki-67 expressions assessed together may be gives more prognostic information in breast cancer.

HER-2	Ki-67	DFS (%±Std. Error)	OS (%±Std. Error)
negative	negative	93±3	97±2
negative	positive	88±3	92±3
positive	negative	82±5	88±4
positive	positive	69±5	74±5

134 Poster

Accumulation of p53 determined by immunohistochemistry as a prognostic marker in node negative breast cancer; analysis according to St Gallen consensus and intrinsic subtypes

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Background: The purpose of the current study was to evaluate the prognostic impact of p53 accumulation by immunohistochemistry (IHC) in node-negative breast cancer and to determine the usefulness of p53 expression in subgroups according to St Gallen consensus and intrinsic subtypes.

Methods: A total 845 consecutive patients with LNN-BC that underwent surgery at the National Cancer Center, Korea between 2001 and 2005 were enrolled. We retrospectively reviewed the clinicopathologic characteristics and disease recurrence. The expression of p53 was assayed using immunohistochemistry (cut-off value: 10%, median value).

Results: The median age was 48 years (range: 25−85) and median follow-up period was 66.0 months (range: 9–101). Univariate analysis determined that tumor size, estrogen !!!receptor (ER), progesterone receptor (PgR), p53 (cut-off value: 10%), and Ki-67 (cut-off value: 15%) were significant for disease free survival (DFS). Of these factors, PgR negativity (HR 3.57, 95% CI 1.26–10.09, P = 0.01) and p53 positivity (HR 3.17, 95% CI 1.51–6.65, P =0.002) were identified as independent prognostic factors for DFS based on multivariate analysis. After then, we divided total patients into 4 intrinsic subtypes by expression of ER, PgR and HER2 and two risk groups (low-, intermediate-risk) by St Gallen consensus, and compared the DFS according to p53 expression in each subgroup. In luminal A, triple-negative subtypes and intermediate risk group, there were significant differences in the DFS rates. (5-yr DFS rate, luminal A; 97.2% for p53(−) vs 93.8% for p53(+); P = 0.03, triple-negative subgroups; 94.1%