response rate of the patients with 3435T-2677T, 3435T-1236T or 3435T-2677T-1236T haplotypes was lower than that of the patients with the other corresponding haplotypes ($P = 0.018$, 0.011 and 0.019, respectively), too. Noticeably, the patients with both the adverse genotypes of *GSTP1* 314AA and *MDR* 3435TT shown the worst treatment efficacy in all (14.3%; $\chi^2=26.33$, $P = 0.000$).
Conclusion: Polymorphisms in *GSTs* and *MDR1* genes may help to predict anthracyclines response, but further validation is required. These results provide support for a polygenic pathway approach for assessing the predictive potential of polymorphisms in treatment outcome.

5079 POSTER

The Substantiation of Optimal Approaches to Systemic Treatment for Patients With Metastatic Breast Cancer

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Breast cancer is one of the most common malignancies in the US and Europe. Our work is directed on the decision of actual clinical problem in oncology. The investigation aimed to improve the results of systemic treatment for patients with metastatic breast cancer. It is reached via consideration of optimal chemotherapy duration, elaboration of indications and contra-indications for continuation or termination based on defining factors, which influence on total and recurrence-free patients' survival.
Patients and Methods: 128 women with histologically confirmed metastatic breast cancer, received monotherapy with Paclitaxel 80 mg/m^2 weekly. Patients (Pts.) were divided for 2 groups. First group consists of 61 pts. received chemotherapy during 24 weeks. Second group included 67 Pts. received chemotherapy without limitation term of treatment.
Results: Treatment of patients on the stage of 24 weeks were identical in both groups and corresponded to the known international data. Continuation of treatment from 24 to 48 weeks improved the results of of tumour response on 27.5%. Thus treatment appeared most optimal duration 40 weeks.
The following results in both groups have been found. The patients with liver and lymph nodes lesions who have stable disease response at week 24 should stop the treatment. If the response is partial the treatment may be prolonged up to 32 weeks. If the partial response grows and preserves at week 32 the treatment may be prolonged till week 40 and must be stopped. If the partial response does not grow 32 week term of treatment is sufficient. The patients with breast cancer with liver or liver and lung localized metastases who have objective treatment response are recommended to be treated up to 48 weeks (if possible). Only if the partial response growth is preserved after 48 weeks at the last control time interval uninterrupted treatment may benefit. If the partial response is stable the treatment may be terminated.
Conclusions: Taking into account the substantial differences of efficiency depending on duration of chemotherapy, necessary selection of patients for it's continuation. Testimonies to continuation of treatment were the next: presence of metastases in a liver maintenance of partial tumour response on treatment and it's increase for the last controlled interval of time.

5080 POSTER

Association Between Some Markers (β-Tubulin III, Tau-1, BRCA-1, DPD, TP, TS) and Treatment Response in Patients With Advanced Breast Cancer

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Background: The main purpose of our study was to find substitute predictive markers for treatment response in women with advanced breast cancer.
Materials and Methods: 39 patients with advanced breast cancer, treated in the St. Petersburg Research Institute of Oncology between 2007 and 2009 were included in this trial. 20 patients received docetaxel 75 mg/m^2 .i.v. once every three weeks and 19 patients were treated with capecitabine 2500 mg/m^2 per os. We compared the expression of BRCA-1, β-tubulin, and tau-1 in the 20 patients treated by docetaxel between those with a good overal response (stable and partial) and patients with a progression of disease. In the group including 19 patients we compared the expression of DPD, TP and TS between the same response subgroups.
Results: A low expression of BRCA-1, β-tubulin, and tau-1 in patients receiving docetaxel correlated with a worse response. Among the patients receiving capecitabine a low expression of DPD, TP, and TS correlated with a good response.
Conclusion: These results demonstrate that BRCA-1, β-tubulin and tau-1 may be substitute markers for patients receiving docetaxel. DPD, TP and TS may be markers among patients receiving capecitabine.

5081 POSTER

ABO and Rh Blood Groups Frequency in Women With HER2(+) Breast Cancer

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Background: The role of genetic factors in the development of cancer is widely accepted. In 1953 Aird et al. reported a relation between blood group A and cancer of the stomach. Recently the relation between pancreatic cancer and ABO blood group has been described. It is well known that genetic factors (e.g. BRCA1/2) are involved in the etiology of some cases of familial breast cancer. ABO blood group genes are mapped at the chromosome 9q, in which the genetic alteration is common in many cancers. Individualized current therapeutic strategies for patients with primary breast cancer are frequently determined by the size of the primary tumour, axillary lymph node status, and pathologic stage of disease, status of estrogen receptor and progesterone receptor activity and HER2 over expression. In some previous studies, investigators have recognized ABO blood group as a predisposing or prognostic factor in breast cancer. The aim of this study is to investigate the presence of a possible association between HER2(+) breast cancer in Turkish women and ABO blood groups and Rh factor.
Material and Methods: In 294 female patients with HER2(+) breast cancer, blood group and Rh factor were examined. the relationship of blood groups with age, menopausal status, family history of cancer, ER, PR and HER2 status were evaluated and compared with the healthy volunteer donors control group of 22,821 people which admitted to Ankara University Medical School Blood Center at 2010.
Results: Information on ABO blood type and Rh factor were available for 294 patients. The median age was 47 (range: 20−80) and 56% of patients were at premenopausal period. Estrogen and progesterone receptor were positive 50% and 60% respectively. Overall, the ABO blood group distribution of the 294 HER2(+) breast cancer patients was similar to that of the Turkish general population. There wasn't statistically significant difference ($p = 0.36$) between groups (see Table 1). Also blood type and ER, PR and menopausal status was not correlated. However, patients with blood group A and 0 Rh(+) had higher family history of cancer ($p = 0.04$).
Conclusion: In the present study we didn't find any relationship between HER2 status and ABO blood group and Rh factor. However further studies with larger number of patients are needed to establish the role of blood groups as a prognostic factor in patient with breast cancer.

Table 1: The blood group distribution of patients and control group

Blood group	Number of subjects			
	HER2(+) patients		Controls	
	n	%	n	%
A Rh(+)	135	45.8	8795	38.54
A Rh(−)	10	3.4	1130	4.95
B Rh(+)	37	12.6	3185	13.96
B Rh(−)	5	1.7	425	1.86
AB Rh(+)	19	6.5	1581	6.93
AB Rh(−)	2	0.7	205	0.90
0 Rh(+)	77	26.2	6550	28.70
0 Rh(−)	9	3.1	950	4.16
Total	294	100	22821	100

5082 POSTER

Identification of Protein Markers Predicting Chemotherapy Resistance in Breast Cancer

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Background: Metastasis and subsequent resistance to therapy is a major cause of death in patients with breast cancer. Although a large number

of effective chemotherapeutic drugs are available, it is difficult to predict which combination of drugs shows clinical benefit in the individual patient. Clearly, molecular markers are needed that can predict therapy efficacy.
Our goal is to identify protein markers that can predict resistance to anthracycline-based chemotherapy in breast cancer patients using a **comparative proteomics approach**.
Materials and Methods: Snap frozen primary breast tumour tissues (n = 34) were used from patients treated with first line anthracycline-based chemotherapy for recurrent disease. 23 patients responded to treatment (objective response, OR), 15 were resistant (progressive disease, PD). From each tumour tissue, 10 mm cryosections were subjected to laser capture microdissection. Per tissue, ~4,000 epithelial tumour were collected, tryptic digests were prepared, and measured by MALDI-FTICR mass spectrometry (MS). Comparative peptide profiling performed for the identification of differentially abundant proteins, which were subsequently associated with clinical parameters.
Results: A total of 165 differential peptides were identified ($p < 0.05$), of which 16 had a $p < 0.01$. Of the latter peptides, 1 was higher in OR, 11 were higher in PD, and 4 were uniquely present in PD. Through targeted MS/MS, amino acid sequence of 10 peptides was revealed. 10 out of 16 peptides associated with progression free survival upon first line FEC/FAC treatment. Using step-down analysis, a 2 peptide predictor (representing NONO and RPS2A proteins) was built. The predictor had a strong correlation with therapy resistance ($X^2 = 14.8$, $p < 0.0001$), HR = 7.0, [95% CI: 2.4–20.3], $p < 0.0001$.
Conclusion: A 2-peptide predictor was identified for 1st line chemotherapy resistance in breast cancer. Further validation in independent samples is needed to determine clinical relevance.

5083 POSTER

The Predictive and Prognostic Significance of PTEN, P27 and PI3K Expression in HER2 Overexpressing Metastatic Breast Cancer

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Background: In this study we aimed to investigate the predictive and prognostic significance of PTEN, PI3K and p27 expression which are components of the PI3K/Akt signaling pathway in HER2 positive metastatic breast cancer.
Material and Methods: Twenty-five patients who carried a diagnosis of metastatic HER2 positive breast carcinoma and who have received trastuzumab-based therapy as first-line treatment were recruited for the study group. All of the patients breast tissue samples were evaluated for PTEN, PI3K and p27 expression by immunohistochemistry and their correlations with tumour characteristics, response to treatment, time to progression (TTP), time to recurrence (TTR) and overall survival (OS).
Results: In 76% (n = 19) of the patient group PTEN expression and in 80% (n = 20) p27 expression was found to be negative. In 24 subjects (96%) PI3K expression was reported as positive. When the group of patients who respond to trastuzumab treatment was compared to the group who did not respond to treatment with trastuzumab, there was no statistically significant association found for expression of PTEN, p27 and PI3K. When the same comparison was made for tumour characteristics a significant relation was found between tumour size and PTEN, p27 and PI3K expression (p values 0.009, 0.003 and <0.001, respectively); but a statistically significant relation between expression of the above stated expression of the genes and tumour grade, lymphatic invasion, vascular invasion, and presence of distant metastasis was not found to be present. OS and TTP was significantly longer in the patient group who responded to trastuzumab based treatment compared to the group who was unresponsive to the treatment (p values 0.016 and 0.006, respectively). Although the status of PTEN, p27 and PI3K expression was not found to be significantly correlated with response to trastuzumab treatment a trend towards lower OS, TTP and TTR in patients with loss of PTEN expression which did not reach a statistical significance was observed. A similar trend for lower OS and TTR in patients whose tumour tissues did not express p27 was also found. A relation between PI3K expression and tumour characteristics with OS, TTP and TTR was not found.
Conclusions: Loss of expression of PTEN, low expression of p27 and positive PI3K expression was found to be frequent in HER2 positive breast cancer. Their frequency was higher when compared to frequency of expression in sporadic breast cancer reported in the literature. Although the small number of our study group has made statistical interpretation of the results difficult, we propose the results of our study support the view that the presence of PTEN and p27 expression in HER2 positive metastatic breast cancer predicts response to trastuzumab treatment and shortened OS. Our results indicate that PI3K/Akt signaling pathway is active in HER2 overexpressing breast cancer.

5084 POSTER

Receptor Conversion in Breast Cancer Brain Metastases (BM)

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Background: Several studies have indicated that the phenotype of breast cancer metastases may differ from those of primary tumour (PT). However, the data on such conversion for BM is limited. We compared the immunohistochemistry (IHC) expression of ER, PgR and HER2 in BM with that in the matched PT in 96 breast cancer patients (pts) who underwent excision of BM.
Methods: Pt characteristics (after exclusion of missing data): mean age at brain surgery: 52 years (29−83 years); 84% ductal carcinoma, 58% grade 3, 41% ER+, 30% PgR+ (⩾10% tumour cells with nuclear staining), 44% HER2+ (IHC 3+ or FISH+), 32% triple-negative (TN). 95% of pts underwent breast cancer surgery, preceded in 40% by systemic therapy. Prior to brain surgery 96% and 42% of pts, respectively, received chemotherapy or endocrine therapy as (neo)adjuvant or palliative treatment, and 77% of HER2+ pts received trastuzumab. The median time from breast cancer diagnosis to brain surgery was 29 months (range: 0 to 166 months). 67% of pts had single BM and 24% had 1−3 lesions. The most common site of BM was cerebellum and parietal lobe. 64% of pts had controlled extracranial disease at brain surgery and 87% had Karnofsky PS ⩾ 70%. After brain surgery 83% of pts received radiotherapy, 57% chemotherapy, 21% endocrine therapy and 27% anti-HER2 therapy.
Results: ER and PgR conversed to negative in 47% and 59% of pts, respectively, and to positive in 19% and 13% (Table). The respective conversions for HER2 were 8% and 13%. Of the 31 TN cancers 8 (26%) gained ER or PgR and 2 (7%) HER2. The percentage of hormone receptor (HR) positive tumours was lower in BM than in PT (ER: 33% vs 41%; PgR: 22% vs 30%, respectively), whereas it was similar for HER2+ (44% vs 47%) and TN cancers (32% vs 34%). HER2 loss in BM occurred in only 8% of pts who received trastuzumab. The median overall survival from brain surgery in the entire group was 13.4 months (16.1, 12.2 and 15.7 months for ER/PgR+, TN and HER2 in BM, respectively; all HER2+ pts were assigned to HER2+ group, irrespective of HR expression). There was no apparent prognostic impact of any receptor conversion.
Conclusions: Receptor conversion is a common event in breast cancer BM. Predominant conversion includes the loss of HRs, whereas HER2 and TN phenotypes are more stable. Trastuzumab therapy does not impact HER2 expression in BM.

Receptor	Total	pos-neg (%)	neg-pos (%)
ER	95	18/38 (47%)	11/57 (19%)
PgR	94	16/27 (59%)	9/67 (13%)
HER2	92	3/40 (8%)	7/52 (13%)

5085 POSTER

New Curcumin Analogue RL-66 Has Promising Anti-breast Cancer and Antiangiogenic Activity

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Previously we reported that the new curcumin analogue RL-66 had promising cytotoxicity in various estrogen receptor (ER) negative breast cancer cells. Therefore, we further explored the anticancer potential of RL-66 in MDA-MB-468 human breast cancer cells. Cell cycle distribution and apoptosis induction were assessed by flow cytometry and protein expression was analyzed by Western blotting. Furthermore, the effect of RL-66 on tumour growth was examined in MDA-MB-468 mouse xenograft