and Her2. So, we distingue in this group the basal-like suptype (ER−, PR−, Her2−, cytokeratin (CK) 5/6+ and/or Her1+) and unclassified subtype (ER−, PR−, Her2−, Her1− and CK5/6−).
The aim of this study is to determine the clinicopathological, histological, therapeutic and prognostic features associated with this type of breast cancer.
Material and Methods: This is a retrospective study of 366 Breast cancer females diagnosed between January 2007 to June 2010 at the Department of pathology. Epidemiological, clinical, histological, therapeutic and evolutive data were analyzed: the histological grade is determined and based on the Scarff-Bloom-Richardson grading system (SBR). For Her2, immunohistochemical was carried out using with HercepTest, All Her2 score 2+ cases were analysed by FISH.
OS and DFS rates were estimated by Kaplan–Meier analysis and a log-rank test to estimate outcome.
Results: 17.5% of all breast cancer women (64 women) were identified TNBC, 12.6% were basal-like, 4.9% were unclassified subtype. The median age is young (45 years) and the median tumour size is high (4.3 cm).
TNBC were associated most often with a high grade; 49.2% grade III (53% for unclassified subtype, 47.6% for basal-like). Vascular invasion was found in 26.6% of cases (22% for unclassified subtype and 28.3% for basal-like subtype). For the lymph node involvement: 51% had positive lymph nodes, and 22.4% had distant metastases. For the AJCC staging, 17.2% were classified stage I, 20.7% stage IIA, 13.8% stage IIB, 10.3% stage IIIA, 15.5% stage IIIB, and 22.4% were stage IV. For treatment modalities, we have 94% of TNBC underwent surgery. Although, neoadjuvant chemotherapy was administered to 18% patients with 6% of complete pathologic response and adjuvant chemotherapy to 82%. 98% received anthracycline based regimen and only 30% received taxanes.
The Kaplan–Meier curves based showed the lowest survival probability (49% of OS, and 39% at the 3-years DFS).
Conclusion: TNBC is associated with young age, high grade tumours, advanced stage at diagnosis, important lymph node involvement, and distant metastases. Critical to optimal future management are accurate identification of truly triple negative disease and adequately powered prospective TNBC trials to establish treatment efficacy and define predictive biomarkers.

5100 POSTER

Relationship Between Survival, Hormone Receptor Rate, and Ca 15−3 Serum Levels in Patients With Isolated Liver Metastases From Breast Cancer

F. Lumachi[1], S.M.M. Basso[2], F. Marino[3], R. Orlando[4], U. Basso[5], G.B. Chiara[2]. *[1]University of Padua School of Medicine, Department of Surg & Gastroenterol Sciences, Padova, Italy; [2]S. Maria degli Angeli Hospital, Chirurgia 1, 33170 Poerdenone, Italy; [3]University of Padua School of Medicine, Department of Pathology, Padova, Italy; [4]University of Padua School of Medicine, Department of Medical & Surg Sciences, Padova, Italy; [5]Istituto Oncologico Veneto (IOV) IRCCS, Medical Oncology 1, Padova, Italy*

Background: Breast cancer (BC) is the is the most common cancer in women, and the liver is one of the site of distant metastases, accounting for about 15% of patients with BC. Isolated liver metastases (LMs) are uncommon, and the presence of extra-hepatic disease usually represents a contraindication to liver resection. Liver metastasis of BC origin is usually life limiting, and the patient needs treatment. Surgical resection of parts of the liver is considered the only potentially curative therapy, but unfortunately only few patients are suitable for liver resection. The 5-year survival of patients with LMs from colorectal cancer ranges from 20% to 25%, while the survival period after resection to manage LMs from BC is unclear, due to the limited number of studies, ranging between 36−42 months. The aims of this study were (1) to identify factors predictive of survival of women with LMs from BC who underwent liver resection, and (2) to evaluate the relationship between survival, age, primitive tumour size, number of LM, serum carbohydrate antigen (CA) 15−3, estrogen receptor (ER) and progesterone receptor (PR) rate.
Patients and Methods: Medical reports of a group of 11 women (median age 57 years, range 39−67 years) with LM and no evidence of extra-hepatic disease who had undergone curative surgery for BC were reviewed retrospectively. All patients received 6−12 cycles of neoadjuvant chemotherapy (anthracyclines) alone or chemotherapy plus hormone therapy (tamoxifen or aromatase inhibitors) prior to liver resection (wedge resection or segmentectomy), and those with disease progression were excluded. The following parameters were recorded: age of the patients, size (maximum diameter measured by the pathologist) and number of the LMs, size of the primitive tumour, preoperative CA 15−3 serum levels, ER and PR rate.
Results: All LMs were metachronous, 7 patients had a single LM, 3 had two LMs, and 1 had three LMS. The baseline data were: size of the primitive BC = 25.8±6.4 mm, number of LMs = 1.4±0.68, ER = 6.6±33.8%, PR = 48.3±34.2%, CA 15-3 = 84.7±33.1 U/mL. The median survival rate was 32 months (range 12−77 months). There was a significant correlation between ER and both PR ($R = 0.95$, $p < 0.001$) and CA 15-3 ($R = 0.64$, $p = 0.034$), and between CA 15-3 and both PR ($R = 0.67$, $p = 0.024$) and number of LMs ($R = 0.69$, $p = 0.017$). At univariate analysis younger age, number of LMS, and size of the primitive tumour were associated with poorer prognosis, while at multivariate analysis only the age ($R = 0.81$, $p = 0.002$) of the patients was an independent factor of survival.
Conclusions: The survival of patients with BC and LMs is independent of hormone-receptor status and serum CA 15-3 levels at the time of liver resection.

Poster Presentations (Sun, 25 Sep, 14:00−16:30)
Breast Cancer − Early Disease

5101 POSTER

86 Cases of Early-onset Breast Cancer in Hungary − Retrospective Analysis of Immunohistochemistry (IHC) and Family-history Data − Assessing the Risk of Carrying BRCA1 and BRCA2 Mutation

Z. Baranyák[1], L. Madaras[1], A.M. Tokés[1], A.M. Szász[1], B. Székely[1], J. Kulka[1]. *[1]Semmelweis University, 2nd Department of Pathology, Budapest, Hungary*

Background: It has long been debated whether breast cancer diagnosed at a young age is a clinically and etiologically distinct disease from breast cancer diagnosed later in life.
The aim of the present study was to retrospectively investigate clinicopathological characteristics and prognosis, as well as to assess the probability of carrying BRCA mutations in our group of young breast cancer patients.
Material and Methods: We included women diagnosed with invasive breast carcinoma younger than/or at the age of 35 years. Between 2000–2009 eighty-six (86) cases were selected from the files of the 2nd Department of Pathology, Semmelweis University.
Family history, clinicopathological and follow-up data were analyzed. BRCAPRO software analyses were performed to assess the probability of BRCA1 and BRCA2 mutations.
The tissue specimens were reviewed for histological type, nuclear/histological grade, tumour size, lymph node status, estrogen receptor (ER), progesterone receptor status (PR), Ki67, p53, HER2 and CK5/6.
Results: The mean age in the study group was 31.49 years at the time of diagnosis. Analyzing the family history in 41 cases 54 malignant tumours, mainly breast carcinomas (48%) were recorded. In the two most affected families 5−5 malignancies were found in each family. Based on the IHC results we grouped the examined tumours according to the four main molecular subtypes. Out of 81 patients, 37.05% were luminal A; 16.05% luminal B; 28.4% triple negative; and 18.5% HER2.
Evaluating the results of the BRCAPRO software we found higher than 10% of carrier probability in 14 cases (32.56%) regarding BRCA1 and in 2 cases (4.65%) concerning the BRCA2 gene. From the data provided we got to know that 24 of our 86 patients died already.
Conclusions: Despite the relatively short period of follow-up, more than one-fourth of our patients have already died, and there were a large amount of malignancies among the families involved.
According to our results luminal A and triple-negative subtype was the most common breast cancer subtype in this group of young patients. Carrier probabilities determined by BRCAPRO raised the necessity of the detection of the mutations of BRCA genes among the examined cases.
Sequencing the 5 most common BRCA1 and BRCA2 mutations occurring in Hungary is under progress in our study group.

5102 POSTER

Gene Expression Patterns in Canine Mammary Osteosarcomas Versus Osteosarcomas of the Head and Trunk

E. Hellmén[1], K.M. Boerkamp[2], H. Göransson Kultima[3], G.R. Rutteman[2]. *[1]SLU, Anatomy Physiology and Biochemistry, Uppsala, Sweden; [2]University of Utrecht, Department of Clinical Sciences of Companion Animals, Utrecht, The Netherlands; [3]Uppsala University, Department of Medical Sciences, Uppsala, Sweden*

Background: Tumours in the breasts or mammary glands affect women, dogs, cats and rodents. In addition to the frequent carcinomas there are other types, such as sarcomas that by definition originate from mesenchymal tissues. Breast sarcomas usually appear as fibrosarcomas and osteosarcomas and, to the best of our knowledge, only in humans and dogs. However, the origin of mammary sarcomas is not fully

understood and our interest was to compare the gene expression pattern of mammary osteosarcomas to that of osteosarcomas on the head and the extremities. We have previously reported that genes related to the embryonic development of the head are overrepresented in canine mammary sarcomas compared to mammary carcinomas [1].
Material and Methods: The study investigates gene expression profile in canine mammary osteosarcomas as compared to normal mammary tissues − based upon the earlier Affymetrix-assay [1] −, with that of head osteosarcomas and extrimity osteosarcomas.
Analysis of the gene expression data was carried out in the statistical computing language R (http://www.r-project.org) using packages available from the Bioconductor project (www.bioconductor.org). The raw data were normalized using the (RMA) method [2]. In order to search for the differentially expressed genes, an empirical Bayes moderated t-test was applied [3]. To address the problem with multiple testing, the *p*-values were adjusted according to Benjamini and Hochberg [4]. The hierarchical clusterings were performed in the program Genesis, version 1.7.1 [5].
Results: Preliminary results of the Affymetrix data with adjusted p value <0.05 gave about 2500 differentially expressed genes (DEG) in mammary osteosarcomas compared to the control of normal mammary tissue. About half of these genes were similarly expressed in the osteosarcomas of the head and the trunk (1140 and 1211 respectively), whereas 970 genes did overlap. Genes of interest will be further studied, described and be **concluded**.

References

[1] H. Wensman *et al.*, *Breast Cancer Res Treat* **118**, 333 (Nov, 2009).
[2] R. A. Irizarry *et al.*, *Biostatistics* **4**, 249 (Apr, 2003).
[3] G. K. Smyth, *Stat Appl Genet Mol Biol* **3**, Article3 (2004).
[4] Y. Hochberg, Y. Benjamini, *Stat Med* **9**, 811 (Jul, 1990).
[5] A. Sturn, J. Quackenbush, Z. Trajanoski, *Bioinformatics* **18**, 207 (Jan, 2002).

5103 POSTER

Status of Granulocyte Colony-Stimulating Factor Receptor in Tumour Tissue of Patients With Breast Cancer

B. Yalcin[1], Y. Gunaydin[2], S. Percinel[3], M. Dogan[4], Y. Urun[4], F.G. Ozal[4], G. Utkan[4], H. Akbulut[4], F. Içli[4], O. Sencan[5]. *[1]Ankara University Faculty of Medicine, Medical Oncology, Ankara, Turkey; [2]Gazi University Faculty of Medicine, Medical Oncology, Ankara, Turkey; [3]Ankara University Faculty of Medicine, Pathology, Ankara, Turkey; [4]Ankara University Faculty of Medicine, Medical Oncology, Ankara, Turkey; [5]Acibadem University Faculty of Medicine, Medical Oncology, Istanbul, Turkey*

Objectives: Granulocyte colony-stimulating factor receptor has been observed on the surface of not only hematopoietic cells but also several cancer cells, including bladder cancer, epithelial skin tumours, primary ovarian cancinomas, ewing sarcom and head and neck squamous cell carcinomas. There was no study to show the expression of GCSF-R in breast cancer. The aim of this study was to investigate the expression of granulocyte colony-stimulating factor receptor in tumour tissue of patient with breast cancer, and also to eveluate the relationship between GCSF-R with prognostic factors and prognosis of patients.
Patients and Method: 57 patients, were diagnosed with breast cancer at Ankara University Faculty of Medicine in 2004–2005 and taken monitoring after treatment, were studied. Tumour tissues were received from paraffin-embedded blocks of patient. GCSF-R detected by immunhistochemical staining method. Results were compared with prognostic factors and prognosis of patients.
Results: Fifty five cases of the 57 breast cancers showed positive stainings of GCSF-R (61.4%), and twenty two cases showed negative (38.6%). There was no relationship between GCSF-R staining and prognostic factors. The prognosis of 49 patients was known. We found 7 relapsing cases(12.2%). 5 cases was in negative group and 2 cases was in positive group. Relaps ($p = 0.041$) and disease-free survival ($p = 0.036$) were more in negative group. There was no relation between overall survival and GCSF-R.
Conclusion: There was no study that showing the relationship between breast cancer and GCSF-R. Our study is the first about this. In this study, we showed that there is GCSF-R expression in tumour tissues of patients with breast cancer. There was no assosiation between prognostic factors and GCSF-R staining. Overall survival was similar. But there was significiant assosiation between GCSF-R staining and patient prognosis. GCSF-R negative group relapsed more than positive. This was very different from the results of studies in other cancers.

5104 POSTER

Vitamin D Analogs Enhance the Anastrozole Activity in Human Breast Cancer Models

B. Filip[1], P. Libako[1], A. Kutner[2], J. Wietrzyk[3]. *[1]Institute of Immunology and Experimental Therapy, Department of Experimental Oncology, Wroclaw, Poland; [2]Pharmaceutical Research Institute, Chemistry Department, Warsaw, Poland; [3]Institute of Immunology and Experimental Therapy, Department of Experimental Oncology, Warsaw, Poland*

Background: Breast cancer is the most common malignant cancer among women in Poland. The growth and invasion of breast cancers are mostly estrogen dependent and estrogens play a key role in cancer progression. Calcitriol is known to evaluate a therapeutic effect against breast cancer, mainly by lowering the expression of estrogen receptors and aromatase activity. Low-calcemic vitamin D_3 analogs; PRI-2191 and PRI-2205 were previously tested for their antiproliferative activity against different cancer cell lines. In our latest studies, the influence of calcitriol analogs on the activity of anastrozole against breast cancer has been evaluated (*in vitro* and *in vivo*).
Materials and Methods: *In vitro:* Cells (MCF-7, T47D, and SKBR-3) were placed in 96-well or 24-well flat-bottom plates at a density of $5x10^3$ or $1x10^5$cells per well 24 hours before addition of the tested compounds. Cancer cells were exposed for 120 hours to calcitriol or its analogs and anastrozole. The cytostatic effect was measured by the SRB assay. The cell cycle changes were evaluated by flow cytometry.
In vivo: The antitumour effect of combined treatment was evaluated as tumour growth inhibition (TGI), tumour volume and body weight changes were monitored.
Results: *In vitro*: PRI-2191 and PRI-2205 showed synergy or an additive effect in proliferation inhibition when combined with anastrozole on T47D, MCF-7 and SKBR-3 cancer cells. The cell cycle observations showed an increase in the percentage of cells in G2/M stage or an induction of apoptosis after calcitriol analogs and anastrozole treatment.
In vivo: Both analogs showed synergy or an additive effect in inhibiting MCF-7 tumour growth. PRI-2191 was found to be more active in inhibiting tumour growth than anastrozole alone.
Conclusion: It is supposed that the calcitriol analogs may be of potential use in anti-cancer therapy when combined with anastrozole.
This work was supported by Ministry of Science and Higher Education Grant No PBZ-MNiI-1/1/2005, “New drugs with specific therapeutic and social values” period of 09.11.2006–08.11.2009.

References

[1] Wietrzyk J. et all, *Steroids* 69/10: 629–635, 2004.
[2] Wietrzyk J. et all, *Anticancer Drugs* 18(4):447−57, 2007.

5105 POSTER

Assessing the Cognitive Function Among the Breast Cancer Patient After Chemotherapy Treatment

M. Matijasevic[1], Z. Zdrale[1], S. Milosevic[1], Z. Tomasevic[1]. *[1]Institute for Oncology and Radiology of Serbia, Daily Hospital for Chemotherapy, Belgrade, Serbia*

Introduction: The previous research has shown the growing evidence of cognitive impairment among the breast cancer patients after receiving adjuvant or local chemotherapy. However the measuring of cognitive function requires additional time and application of complex battery. Therefore, clinical researchers focus their interest on particular aspects of cognitive function. In our research, we have decided to measure the executive function in breast cancer patients after receiving chemotherapy. Executive functions are very important for patients' daily life, but they are also most vulnerable. For this purpose, we used the Trial Making Test, part A (TMT-A) and part B (TMT-B), since they both can be applied easy and in short period of time.
Methods: After they have received chemotherapy treatment, 42 female patients, non-homogeny by age, with breast cancer were examined. We have use TMT-A to measure attention and TMT-B to measure executive function. Their results were compared with results of referent subgroups in general population. The highest subgroup was between 40−49 years old, the before-menopause group.
Results: The results from the TMT-A which measure attention was in average level according to normal population or less then average. Results from the TMT-B which measure executive function were on high level according to normal population 7 (16.7%) patients demonstrated high level results compared to normal population.
Conclusion: The largest subgroup showed the best results as expected. Low score on TMT-A could be explained in view of setting. Patients have completed the tests while they have been waiting for ambulatory examination, so they were excited to hear the state of their health condition.