

Conclusions Over the last decades, local breast cancer therapies became less rigorous, whereas systemic therapy use has increased. Simultaneously, the risk of breast cancer relapse has tremendously decreased, even after adjustment for tumour stage, histology and age.

Table Five-year risk of breast cancer relapse by site of recurrence and period of diagnosis

First relapse site	1972–1979 (n = 113)	1980–1986 (n = 166)	2003–2004 (n = 8417)
Relapse	0.38 (0.29–0.48)	0.35 (0.28–0.43)	0.16 (0.15–0.17)
Locoregional recurrence	0.24 (0.16–0.33)	0.14 (0.09–0.19)	0.04 (0.03–0.04)
Distant metastases	0.27 (0.18–0.35)	0.28 (0.21–0.35)	0.12 (0.11–0.13)
Second primary breast cancer	0.01 (0.00–0.03)	0.04 (0.01–0.07)	0.02 (0.02–0.03)

147

Poster

The Effects of Alcohol Consumption On Breast Cancer Risk Among Women in Developing Countries

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Background: Several research of Breast Cancer has identified certain risk factors over the years, which influence a woman's chance of getting the disease. While factors such as personal history of breast abnormalities, age and the occurrence of breast cancer among first-degree relatives have been identified as estimation factors for breast cancer risk, other factors are less conclusive. Increasingly, obesity is being analyzed as a significant risk factor for many cancers and, after tobacco use, may be one of the most modifiable behavioral cancer risk factors. Interestingly when comparing the incidence rate of breast cancer to the obesity rate nationwide many states show a disparity in the two. It may be that other behavioral risk factors are of greater importance.

Methods: The Nigeria states of Lagos and Kano which are the two most populated states display the highest rates of obesity (over 29.4% of their population display a BMI over 30.0) and the lowest rates in breast cancer incidence nationwide (under 113.9 and 113.5 people per 100.00. residents are diagnosed with cancer each year respectively). We set out to look at various behavioral risk factors to possibly detect an underlying pattern for breast cancer. Using selected urban/semi-urban area risk trend data from the Behavioral Risk Factor Surveillance System from the WHO, we compared median percentages of the following risk factors: health status, exercise, diabetes, flu vaccination, current smoking, alcohol consumption and obesity.

Results: Both states displayed higher percentages in all risk factors compared to the national average except for one in which they were below the national average: Alcohol consumption. These states with the highest incidence rates in breast cancer displayed slightly higher rates of alcohol use compared to other states.

Conclusions: It appears that alcohol consumption might weigh more than other behavioral factors in terms of risk associated to breast cancer. Future research will need to analyze the interplay and patterns of the various risk factors as well as evaluate the association of mammographic density and alcohol consumption to further investigate the role of alcohol in the development of breast cancer.

148

Poster

Epidemiology of Breast Cancer in Ulyanovsk Region, Russia

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Background: The purpose of the study was to describe epidemiologic characteristics of breast cancer patients in Ulyanovsk region. Ulyanovsk Region is a federal subject of Russia with Ulyanovsk being its administrative center. On the 1st of January 2010 population of Ulyanovsk Region consisted of 593 935 men and 704 644 women (totally 1 298 597). The urban population represented 72.9% of total population and rural – 27.1%.

Material and Methods: Population-based cancer registry of Ulyanovsk regional oncology center with the data on 8 142 breast cancer patients from 1986 to 01.12.2009.

Results: In 2008 there were 482 new cases of breast cancer diagnosed in Ulyanovsk region and breast cancer incidence increased by 50% since 1995 (324 new cases of breast cancer).

Approximately 11.6% of rural patients had Stage IV disease, whilst in the group of urban patients this rate was 9.2%, which could be explained by late referrals. In 2 areas of the region more than 15% of patients had distant metastases at the time of diagnosis. At the same time most of urban breast cancer patients had early stage breast cancer.

Analysis of breast cancer survival of urban patients revealed the following data: overall 3-year survival (OS) was 72.48±0.8%, 5-year OS – 61.79±0.9%, 10-year OS – 45.46±1.0% (p=0.01). OS of rural patients was much lower than that of urban patients. So, among rural population 3-year OS was 64.8±0.9%, 5-year OS – 52.2±1.0%, 10-year OS – 35.7±1.1% (p=0.01). Such a significant difference in the survival could be probably explained by a higher number of patients with advanced stages in the rural population group (38.6% in the rural vs. 32.7% in the urban population group). In 4 areas of the Ulyanovsk region 3-year OS was as low as 56%. In the other 4 areas this rate was much higher and figured more than 76%. The rest 14 areas had intermediate rates of survival. The analysis of 5- and 10-year OS showed a similar trend. In the areas where OS was the lowest 14.8% of breast cancer patients had Stage IV disease and 55.5% had Stages 0-II disease, vs. 8.4% and 66% in the areas where survival rates were the highest.

Conclusions:

1. Breast cancer is more often diagnosed among urban population of Ulyanovsk region.
2. Urban patients have higher survival rates, which are associated with earlier diagnosis.

149

Poster

Insulin Resistance, Metabolic Syndrome and Breast Cancer Risk – National Cancer Institute of Naples Experience

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Background: Hormonal changes in menopause, weight gain and insulin resistance appear to influence breast carcinogenesis. Waist circumference ≥ 88 cm, that means android fat distribution, rules as a phenotypical expression of excess intra-abdominal fat. It determines high levels of aromatase production as well as chronic hyperinsulinemia that causes insulin resistance. High levels of insulin can cause its binding to receptors that continuously stimulate the cell to grow, to divide and tend to strengthen its mitogen, gonadotrophic and antiapoptotic secondary effects. Which is the true role of insulin in breast carcinogenesis?

Patients and Methods: Between 2008 and September 2011, 975 patients have been enrolled in our case-control study. We evaluated the association between metabolic syndrome and breast cancer, and focused on the most important feature characterizing metabolic syndrome relation to cancer: insulin resistance. HOMA (*Homeostasis Model Assessment*) was used to determine insulin resistance. The Homeostasis Model Assessment (HOMA) calculates steady state of beta cell function: HOMA IR (insulin resistance). The HOMA- IR was obtained as the product of the fasting plasma insulin level (microU/mL) and the fasting plasma glucose level (mg/dl) divided by 405.

Results: High levels of HOMA- IR were found in 49% of cases [C.I.95%=(0.42–0.51)] compared to 34% of controls [C.I.95%=(0.03–0.38)]. Our data confirm a strict correlation of insulin resistance and breast carcinogenesis, moreover HOMA-IR was very useful to evaluate patients affected by insulin resistance with fasting plasma glucose levels and fasting plasma insulin levels in the range of normal.

Conclusions: According to our experience, android fat distribution and insulin resistance are the most important criteria of MS to consider and on which primary prevention may work on.

150

Poster

Optimal Age to Start Preventive Measures in Women with BRCA1/2 Mutations or High Familial Breast Cancer Risk

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Background: Women from high risk breast cancer families consider preventive measures like screening. Guidelines on screening differ

considerably regarding starting age. We investigated whether initiation of screening could be optimized using family history on age at diagnosis.

Material and Methods: We analyzed the age at breast cancer detection of 1304 first and second degree relatives of 314 *BRCA1*, 164 *BRCA2* and 244 high-risk participants of the Dutch MRI-SCreening study. The within and between family variance in age at diagnosis was analyzed with a random effect linear regression model. We compared effects of starting age of screening based on risk-group or on family history only, and on the model, combining the two. The findings were validated in 63 families from the UK- MARIBS study.

Results: Mean age at diagnosis in the family varied between families; 95% range of mean family ages was 35–55 in *BRCA1*, 41–57 in *BRCA2* and 44–60 in high-risk families. 14% of the variance in age at diagnosis was explained by family, 7% by risk group. When starting screening was based on family-ages alone some cancers were missed, when based on risk group alone women were screened unnecessarily long. The model approach could prevent on average 2 unnecessary screening years per patient, without missing cancer cases.

Conclusions: Age at breast cancer diagnosis is partly family dependent, which should be taken into account for determining starting age for preventive measures. Our model can be used to balance the disadvantages of starting too early and the risk of starting too late.

151

Poster

Utility of the CellSearch™ System to Predict Radiologically Confirmed Failure of Systemic Therapy in Patients with Metastatic Breast Cancer – a Single-institution Experience

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The occurrence of circulating tumor cells (CTC) in the peripheral blood of patients (pts) with metastatic breast cancer (MBC) is now widely recognized as an adverse prognostic factor. Moreover, CTC determination has been successfully used to monitor various systemic antineoplastic treatments (Tx) in MBC. Moreover, serial CTC measurements seem to be a more rapid and sensitive means to assess Tx failure as any routinely applied radiologic technique. Among different methods introduced so far for CTC detection, the CellSearch™ system (CSS; Veridex, Raritan, NJ) is the only one which has achieved both an FDA-approval and a positive recommendation status in the German guidelines for diagnosis and therapy of MBC, as well. Despite its unequivocal prognostic and predictive value demonstrated in prospective clinical trials, there are only rare data for CSS in routine use so far. We hereby report on our single-institution experience with the routine use of CSS to monitor pts on systemic Tx due to MBC.

A total of 35 pts with MBC were included in this non-interventional study. Systemic Tx was as follows: chemotherapy (CTx), n=8; endocrine Tx (HTx), n=9; targeted Tx (TTx), n=1; multimodal combinations of either CTx or HTx and TTx (MTx), n=17. Baseline investigations including both CTC determination by CSS and the appropriate radiologic technique were performed immediately prior to start of Tx. A second CTC count was scheduled 6 weeks later. For all CTC counts, a value of >5 CTCs per 7.5 mL venous blood was considered pathological. The first radiologic tumor reevaluation was performed 12 weeks after Tx initiation and repeated every 12 weeks in cases that did not show clear evidence of disease progression (PD).

All pts with radiological PD showed either increasing (n=12) or decreasing, but non-normalized CTC values (n=3). Four of these pts had moderately increasing CTC counts within the normal range. In pts lacking radiological evidence of PD, remained normal in 12 cases, normalized in 6 cases and decreased without normalization in another 2 instances. Thus, the positive predictive value (PPV) for the CCS for Tx failure was 73.3% with a negative predictive value (NPV) of 90%. Hence, the overall predictive accuracy for radiological Tx failure was 82.9%.

To conclude these results, were able to reproduce positive predictive findings of the CCS achieved in controlled clinical trials in the clinical setting studying non-preserved pts. As in previous clinical trials, the CCS appears to be a valuable tool to monitor systemic Tx for routine MBC pts providing a particularly high predictive accuracy for Tx failure. Moreover, CCS is both easy to perform and able to precede any radiologic tumor imaging by at least 6 weeks, as well. Therefore, we urgently await that CTC-monitored Tx for MBC should be included any in large-scaled clinical trial in future.

152

Poster

Usefulness of Telemammography Using Soft-copy CR (computed Radiography) in Mammographic Screening in Japan

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Background: Over 70% of mammography apparatus in Japan have already become digital. About 80% of them utilize CR (computed radiography), and the majority of them necessitate hard-copy reading. Therefore, the evaluation of soft-copy CR mammography interpretation is still controversial. However, hard-copy reading cannot show superiority of digital technology to conventional screen film (S/F) system. The purpose of this study is to clarify the usefulness of soft-copy CR mammography through our 6 years' experience of mammographic screening with telemammography.

Screenings and Methods: We took CR mammograms of 28,741 women with PCM system (Konica Minolta) and digitized them with Regius Model 190 (Konica Minolta) at Kochi Kenshin Clinic, between July 2005 and March 2010. We interpreted the soft-copy of them using Vox-Base II (J-MAC System, Inc.) with a couple of 5M-pixel monochrome LCD monitors and transferred them to Kochi Medical School via optic fibers (provided by NTT and STNet). The security of network was protected by Virtual Private Network (VPN). We interpreted them using two kinds of mammography viewing system: SenoAdvantage (GEYM) and a viewer produced by Carestream Health and reported the results of interpretations through the same network.

Results: 15,460 screeners (53.8%) had a mammogram in the past 2 years. The recall rate was 6.0%, the cancer detection rate 0.33% and the positive predictive value 5.5%. These results were not inferior to those of Kochi Prefectural screening program using S/F mammograms of 82,154 screeners during the same period (6.7%, 0.30% and 4.4%, respectively). Moreover, telemammography and online reporting enabled screeners to know their own results within 1 week that is over 1 week shorter than before telemammography introduction. We provided the redundant labor force that was acquired from telemammography for telephone recall. As result, the hospital visit rate of recalled women increased to 92.2% from 60.5% during 6 years.

Conclusions: The long-term results of mammographic screening using soft-copy CR is almost equivalent to those of S/F system. Moreover, telemammography and online reporting could yield various beneficialness for screeners. Therefore, soft-copy CR mammography might be useful for mammographic screening in Japan.

153

Poster

Anthropometric Breast Measurement – a Study of 55 Korean Female

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Background: Anthropometric measurements and proportions of the human body have made a significant contribution to the science of aesthetic and reconstructive plastic surgery. The present study was performed to measure anthropometric breast values in Korean female and compare them with those of women in other nations.

Methods: The study included 55 female between the ages of 20 and 50 years with no physical or developmental deformity. A total of 19 parameters were measured in a standing position. The parameters measured were body weight, height, shoulder width, upper chest width, middle chest width, lower chest width, waist width, hip width, clavicle-nipple length, sternal notch-nipple length, nipple-nipple length, upper arm length, medial mammary radius, lateral mammary radius, nipple-inframammary fold length, nipple diameter, areola diameter, nipple projection, and mammary projection. Breast volume, breast ptosis, and retracted nipple rates were also assessed.

Results: As a result, an average breast volume for Korean women was obtained (289.96±212.5 cc 325.36 ml), and a table with several linear equations for calculating. The ideal external view of the breasts with equal volume for both sides and no ptosis was observed in 12.3% of the volunteers. The percentage of women with unilateral or bilateral retracted nipple was 16.7%.

Conclusions: The results of the present study will help in comparing the anthropometric breast values of Korean women with those of women in other countries.