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An Abnormal Screening Mammogram Causes More Anxiety Than a Palpable Lump in Benign Breast Disease

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Background: Being recalled for further diagnostic procedures after an abnormal screening mammogram (ASM) evokes high state anxiety with lowered quality of life (QoL). We examined whether these adverse psychological consequences are found in all women with benign breast disease or especially in women referred after ASM. In addition, the influence of the personality characteristic trait anxiety was also analysed. Trait anxiety is defined as a relatively stable individual difference in anxiety proneness.

Methods: Between September 2002 and February 2010 we performed a prospective longitudinal study in six Dutch hospitals. Women referred after ASM *or* with a palpable lump in the breast (PL) were included. Before diagnosis was known and during follow-up questionnaires were completed concerning trait anxiety (baseline), state anxiety and depressive symptoms (baseline, one, three and six months after diagnosis), and QoL at baseline and 12 months after diagnosis.

Results: Women referred after ASM (N = 363) were compared with women with PL (N = 401). After ASM women scored similar on state anxiety compared with PL, but higher on depressive symptoms at baseline with lower scores on general and psychological QoL at 12 months.

Women were divided in four groups based on the score on trait anxiety (high or not-high) and ASM or PL. Women with high trait anxiety scored unfavourable on state anxiety, depressive symptoms and QoL compared with women not prone to anxiety.

No differences were found in women with high trait anxiety comparing ASM versus PL.

In women with *not*-high trait anxiety and ASM, higher scores on state anxiety at baseline, higher scores on depressive symptoms at all time points, with lower scores on general, physical and psychological QoL at 12 months were found compared with PL.

Conclusions: ASM evokes more momentary anxiety and depressive symptoms with lowered QoL compared with women referred with PL, *especially* in women who are not prone to anxiety. Women should be informed properly about the pro's and con's of the breast cancer screening program. We recommend to identify women who are at risk for adverse psychological consequences after ASM and offer them a tailormade protocol to prevent decreasing QoL.

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Women with Screen-detected Breast Cancer Re-attend the Breast Screening Programme More Often Than Women with Symptomatic Breast Cancer

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Background: In the Netherlands a population-wide breast cancer screening programme is fully implemented since 1996. All women aged 50−74 (70−74 since 1999) are invited biannually. After diagnosis with breast cancer all women are followed clinically until 5 or 10 years after diagnosis, according to the prevailing guideline. Thereafter, women then 50−74 years old can re-enter the screening programme. However, the relation between yearly clinical follow-up by mammography and the national screening programme is not well established.

This study evaluates the factors influencing which women are re-entering the regular screening programme after their breast cancer treatment.

Methods: All women 50−64 years of age, diagnosed with breast cancer between January 1996 and January 2005 in the northern region of the Netherlands, were selected from the Netherlands Cancer Registry and these date were linked with the National Cancer Screening Programme North to select those women who had attended the screening programme before diagnosis as well as after breast cancer treatment.

Results: A total of 5,090 women were included, 2,605 of whom (51%) were diagnosed with a screen-detected tumour. Twelve percent (n = 609) re-attended the screening programme after treatment. In a multivariate multilevel analysis taking hospital into account, early stage tumours

(p < 0.001), screen-detected breast cancer (p = 0.002), and treatment without additional radiotherapy (p < 0.001) were predictors of attending the screening programme after breast cancer treatment. Furthermore, women treated in a high volume hospital attended the screening programme more often (p = 0.009). Forty percent (n = 246) of the 609 women visited the screening within 5 years after diagnosis, the majority attending 2 years after diagnosis.

Conclusion: After breast cancer treatment 12% of women attended the screening programme, of whom 40% attended within 5 years after diagnosis, thereby overlapping with the regular 5-years of clinical follow-up in the hospital.

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Cadmium Exposure and Breast Cancer Risk

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Background: Cadmium, a highly persistent heavy metal, is known as human carcinogen based on findings of lung cancer in exposed populations. A more controversial target site for cadmium is the human mammary gland, for which some studies indicate a link between cadmium exposure and cancer. There is evidence that cadmium is a new environmental estrogen that mimics the effects of estradiol in estrogen-responsive breast cancer cell lines. We aimed to assess an association between cadmium exposure and risk of breast cancer.

Material and Methods: A hospital-based case-control study of 661 women, aged 23−90 years, with breast cancer and 642 controls without cancer diagnose was carried out in Hospital of Lithuanian University of Health Sciences Kauno Klinikos. Cadmium concentration in urine samples was determined by atomic absorption spectrometry (Perkin-Elmer, Zeeman 3030). A questionnaire was used to collect information on demographic characteristics, family history on breast cancer, factors related to reproductive life of women and lifestyle. Odds ratios (OR) and corresponding 95% confidence intervals (CI) for breast cancer by cadmium levels were calculated by multivariable unconditional logistic regression analysis.

Results: After adjustment for age, income, family history on breast cancer, hormone replacement therapy, and alcohol use, women in the highest tercile of cadmium concentration (>0.48 µg/l) had 1.7 the breast cancer risk of those in the lowest tercile (⩽0.24 µg/l) (OR = 1.67, 95% CI = 1.17–2.40). There was a significant increase in risk with increasing cadmium level in urine (p for trend 0.011).

Conclusion: The data obtained show a possible relationship between cadmium and breast cancer risk.

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Huge Decrease in Risk of Breast Cancer Relapse in the Netherlands over the Last 3 Decades

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Background: To determine the risk of relapse in breast cancer patients treated with curative intent in 2003–2004, compared to the seventies and eighties of the previous century.

Patients and Methods: 8570 Women diagnosed with invasive breast cancer in 2003–2004 were selected from the Netherlands Cancer Registry and compared to a cohort consisting of 133 hospital-based patients treated in 1972–1980 and 174 in 1980–1986. Five-year risk of relapse, i.e., second primary breast cancer, locoregional recurrence or distant metastasis, were calculated by the Kaplan-Meier method. Multivariable Cox-proportional hazards models were applied to correct period-specific risks of relapse for tumour stage, nodal status and age at diagnosis.

Results: Patients diagnosed in 2003–2004 had smaller tumours and a less frequently nodal status 3 than patients diagnosed in the 1970s and 1980s. In 2003–2004 less women were treated with mastectomy and postmastectomy radiotherapy, but more received chemotherapy and hormonal therapy. Five-year risk of relapse decreased from 38% in 1972–1979 and 35% in 1980–1986 to 16% in 2003–2004 (Table). Adjustment for tumour size, nodal status and age hardly changed the improved relapse-free survival in patients diagnosed in 2003–2004 as compared with 1972–1979, yielding a hazard ratio of 0.38 (95% CI: 0.28–0.52).

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)

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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.

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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.

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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.

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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