

of patients did not receive any hormonal therapy. Median time duration between 1st and 2nd malignancy was 12 years in patients who received adjuvant tamoxifen in contrast to 6 months in patients who did not.

Conclusion: seventy five percent patients were metachronous and 62.5% were sporadic. Strong family history and premenopausal status are high risk factors. Hormonal manipulation associated with low risk of contralateral breast cancer. These studies may also help monitor treatments effects of radiotherapy, chemotherapy and tamoxifen therapy. Treatment effects should continue to be monitored, and future guidelines should be provided for long term surveillance of surviving cancer patients.

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Poster

The Correlation Between Recall Rate and Cancer Detection in Mammographic Screening

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Background: Positive screening mammograms leading to recalls for further assessment with negative result, is considered to be harmful in mammographic screening. The aim of our study was to analyze whether there are any correlation between recall rate and the rate of screen-detected and interval cancer in the Norwegian Breast Cancer Screening Program (NBCSP).

Materials and Methods: About 2 million mammography screening tests, 72,000 recalls and 13,000 breast cancer cases, including Ductal Carcinoma In Situ, constituted the basis for this study. The NBCSP was gradually implemented for women aged 50–69 years old in the period 1996–2005. The regression coefficient (t-value for the slope) and the R^2 between the rates of recall and cancer detection in 16 areas in the NBCSP were estimated by a two-way t-test to identify correlation between the covariates.

Results: The recall rate was 4.9% for prevalent and 2.6% for subsequent screens. The rate of screen-detected cancer (DCIS and invasive) was 0.64% and 0.53% for prevalent and subsequent screens, respectively. The interval cancer rate was 18.5 per 10,000 screens. The rate of screen-detected breast cancer increased by increasing recall rate for prevalent ($t=3.40$, $p=0.001$, $R^2=0.13$) and subsequent screening tests ($t=6.83$, $p<0.001$, $R^2=0.44$). The recall rate did not show any correlation with the interval cancer rate ($t=-0.679$, $p=0.500$, $R^2=0.010$).

Conclusion: The recall rate shows a statistically significant positive correlation with the rate of screen-detected cancers in the NBCSP. The interval cancer rate, however, does not show any statistical significant correlation with recall rate. It thus seems that a higher recall rate did not succeed in detecting the fast growing tumors leading to interval cancer.

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Poster

Surgical Procedures in Screen-detected Cancer by Tumor Size, Grade and Calendar Time

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Background: Screening mammography has led to an increasing incidence of breast cancer and subsequently more women undergo surgery for the disease. We wanted to investigate the use of mastectomy by calendar time in women diagnosed with screen-detected breast cancer with different size and grading.

Materials and Methods: About 2 million mammography screening tests, and 10,000 screen-detected breast cancer cases, including Ductal Carcinoma In Situ (DCIS), constituted the basis for this study. The NBCSP was gradually implemented for women aged 50–69 years old in the period 1996–2005 and the number of hospitals offering breast surgery decreased from about 60 to 18. The rate of mastectomy versus breast conservation therapy was studied by percentage distribution through the study period.

Results: The percentage of mastectomy decreased steadily by calendar time for DCIS and invasive cancer. Mastectomy was performed in about 80% of the DCIS and invasive cancers >20 mm in 1996 while the rate was about 50% in 2009. For DCIS <10 mm, the percentage was below 20% during the entire study period while 60% of the women with invasive cancers <10 mm had mastectomy in 1996, decreasing to 20% in 2009. A trend toward an increasing proportion of mastectomy was observed the last three years of the study period, for tumors of all sizes. For DCIS grade 2 and 3, the rate of mastectomy decreased from 60% in 1996 to 40% in 2009. For invasive cancer, mastectomy was performed in 60–70% of all

tumors in 1996, decreasing to 20% for grade 1, 30% for grade 2, and 40% for grade 3 tumors.

Conclusion: Mastectomy rates have gradually decreased for screen-detected breast tumors in all size and grade during the period 1996–2009. The trend toward increase the last three years should be closely followed as its rationale is uncertain.

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Poster

Breast Cancer Clusters in Rio De Janeiro: Analysis the Existence of Spatial Dependence in the Mortality Rate for Female Population

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Background: High female breast cancer mortality rates have been reported in the State of Rio de Janeiro, Brazil. The authors investigate whether the high breast cancer mortality is evenly spread over the Rio de Janeiro, in the sense that any observed clusters of deaths can be explained by chance alone, or whether there are clusters of statistical significance.

Objectives: To analyze the existence of spatial dependence in the mortality rate for female breast cancer in the State of Rio de Janeiro in the period 2001–2006 and possible explanatory variables.

Material and Methods: Analysis of the spatial correlation of mortality rate from breast cancer was performed in two triennium 2001 to 2003 and 2004 to 2006.

To evaluate the spatial dependence was calculated the Global Moran's Index and being used as explanatory variables: age, race, marital status, educational level, the average income for adult people from the main job (per municipality), the rate of mammography unit by municipality, the Municipal Human Development Index, the Firjan's Index Municipal Development, the percentage of population covered by private health insurance system, the average number of basic care medical visits and total spending per person, per year, on health by the municipal government.

It was used the method to establish the spatial mortality rate caused by female breast cancer and recognize the main aspects of this spatial variation.

Results: The spatial dependence was found in triennium 2001–2003 (Moran I statistic standard deviate = 1,7379, $p=0.0410$) (figure 1), but the same result were not found during 2004–2006 (Moran I statistic standard deviate = 0,4450, $p=0.3281$). The best variable that explains spatial clusters was 'the average income for adult people from the main job' and 'the rate of mammography unit by municipality'.

Conclusion: It was detected during 2001–2003 a spatial dependence in death rate by female breast cancer.

This result may be partly explained by average income per inhabitant (related to poverty) and the rate of mammography unit by municipality.

The use of spatial analysis could allow a better comprehension of geographical distribution of mortality rate caused by female breast cancer in Rio de Janeiro.

The procedure, step by step, used in this analysis showed consistent outcomes and compatible with those of the international literature.

The selection of more explicative variables, including clinical and biological variables, could enable identify more potential factors associated with this death rate, that can provide margins to new investigations as well as subsidize decisions which might help the decline of this rate.

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Poster

Breast Cancer in Ethiopia: the Addis Ababa-Halle University Collaboration Project Studying Incidence, Mortality and Clinical Epidemiology

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Background: An increasing burden of non-communicable diseases in developing countries has so far only been marginally approached. Since 2010, more women die of breast cancer than due to pregnancy-related causes (maternal mortality). Our project is focussing on breast cancer in urban and rural settings in Ethiopia.

Materials and Methods: A collaboration between the Radiotherapy Center and Department of Public Health (University Addis Ababa/Ethiopia) and the Department of Gynecology and Institute of Clinical Epidemiology