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PROFFERED PAPERS

Screening

44 ORAL

Interval cancer in the norwegian breast cancer screening program: is use of hrt of importance?

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Introduction: The Norwegian Breast Cancer Screening Program is population based and offers women aged 50-69 years a two-view mammography examination every second year. The program started in 1996 as a pilot project consisting of two screening rounds, and data regarding the interval cancers are now analyzed. The purpose of this study was to examine the association between interval cancer, breast density and reported use of HRT.

Material and Methods: A total of 247 interval cancers were diagnosed. A blinded review was performed as a part of the program's quality assurance. A mixed set of screening mammograms that consisted of subsequent interval cancers (237), screening normal (373) and screening detected cancers (118) was presented to the radiologists. All mammograms were individually scrutinized by six radiologists, two of those did not work at the screening units involved in this study. Breast density was assigned according to a 3-piece scale: lucent (<30% glandular tissue), intermediate (30-70% glandular tissue) and dense (>70% glandular tissue). Information about ever-use of HRT was collected from a questionnaire that the attendees are asked to fill in at their first screening examination (663 available).

Results: The difference in breast density distribution between the three categories of mammograms was significant (p=0.000). The highest proportion of lucent breasts was found among the screening normal, and the highest proportion of dense breasts was found among the interval cases. The distribution of HRT use among the breast density categories was significantly different (p=0.000). The ever-users of HRT were more frequent than expected in the dense category, and never-users more frequent than expected in the lucent category. There was a significant difference in distribution of ever use of HRT between the three categories of mammograms (p=0.002). Interval cancer cases were more frequent than expected in the ever-use group, whereas screening normal and screening cancers were more frequent than expected in the never-use group. Conclusions: The finding that interval cancers were associated with dense breasts and use of HRT underlines that the effect of high breast density and use of HRT on screening performance must be kept in focus.

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Mammographic screening for breast cancer: is it delivering the expected outcomes in Australia?

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We have examined data on incidence by age and size and mortality by age, both major outcomes of screening, to address directly whether screening in New SouthWales (NSW) is delivering the benefits expected from the randomised controlled trials. Trends in mortality are expected to lag behind any change in screening uptake or underlying risk of breast cancer by at least 5 years. In NSW, screening began in 1991 and targets women 50-69 years of age.

Mortality in NSW has been falling since 1989, well in advance of any effect expected from screening. Age-standardised mortality fell in women 50-69 years by-1.4% a year in 1989-1994 and at a faster rate, by -4.2% a year, in 1994-1999. Incidence, after increasing by +2.9% a year in 1982-89 and +6.0% a year in 1989-94, changed little, falling -1.1% a year in 1994-1999.

To attribute the reduction in deaths to screening, we expected to see a fall in rates of larger breast cancers: we have seen little evidence of it. Rates of 3+mm breast cancers changed little from 1986 to 1995 in women 50-69 years (-4.1%) and women 40-49 years (+4.3%) and were steady from 1995 to 1999 (+0.8% at 50-69 years, +1.3% at 40-49 years).

Breast cancers with 'regional' spread, usually cancer in the lymph nodes, increased in women 50-69 years by +4.2% a year in 1982-1989, +2.4% a year in 1989-1994 and +2.1% a year in 1994-1999. Incidence of these cancers in women of all ages increased in the earliest period, 1982-1989, by +3.6% a year and thereafter changed little (<1% a year).

Screening currently detects only about a third of all newly diagnosed breast cancers in NSW, thus large effects may not be clearly visible in breast cancer as a whole. In addition, an underlying real increase in incidence could mask screening effects.

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The optimal reading protocol in the Dutch nationwide breast cancer screening programme

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Background: The Dutch nationwide breast cancer screening programme offers biennial screening mammography to all women aged 50–74. All films are independently read by two radiologists, who must agree on referral. Of the screened women, 0.98% are referred for further diagnostic assessment, and in 0.47% breast cancer is detected. Whereas the results of initial screens are mostly in line with expectations, detection rate and stage distribution of subsequent screen-detected cancers are less favorable than expected and vary between regions. In search of possibilities to optimize the accuracy of the Dutch screening breast cancer screening programme, a study of different reading protocols was done.

Methods: A test set of previous screening mammograms from 250 cases (interval and screen-detected cancers) and 250 controls was read (independent, blinded) by 18 Dutch screening radiologists. Pairing of the radiologists resulted in a large number of blind double readings. In a second session, three reading protocols to reach the final decision of whether to recall the women were studied: 1. decision by one of the readers; 2. arbitration by a third reader; 3. recall if both readers agree (consensus). Data allowed us to study other reading modalities, such as referral if one reader suggests.

Results: Mean referral rate was 6% for controls and 28% for cases, but there were large differences between radiologists. Pairing of radiologists resulted in 17% discrepant readings (24% for cases, 9% for controls) and 8% readings where both radiologists recommended referral. Reading by consensus resulted in the referral of 33% of cases and 4% of controls. For double reading (one of the reader decides) these percentages were 29% and 4%, respectively, for double reading by arbitration 28% and 3%, respectively. With double reading with recall if one of the readers suggests, 40% of cases would have been referred, but 10% of controls.

Conclusions: Double reading with consensus, which is commonly practiced in the Netherlands, results in a higher detection rate than the two other protocols studied; however, double reading with recall if one of the readers suggests, may result in an even higher sensitivity of the screening programme (increase by about 20%), at the cost of a 2.5-fold higher referral rate. In the Dutch situation, this may be an acceptable alternative, that needs to be further evaluated in a prospective study.

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Surgical quality assurance and breast screening: the nhsbsp-baso breast audit (1995-2000)

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Breast screening programmes offer services to asymptomatic woman. For this reason, the benefits of the programmes must outweigh the risks and the highest possible quality standards must be maintained at every stage of the woman's journey through the system. Quality assurance has been an integral part of the United Kingdom's National Health Service Breast Screening Programme (NHSBSP) since its inception in 1988. Each of the professional groups involved in breast screening, including radiologists, surgeons and pathologists participate in this process.

One of the finest examples of Quality Assurance audits within the NHSBSP is the annual British Association of Surgical Oncologists (BASO)

Breast Audit. This audit was initiated with the intention of examining the extent to which UK breast screening services were meeting the surgical standards recommended in the Quality Assurance Guidelines for Surgeons in Breast Cancer Screening. The annual audit process is organised by the BASO Breast Surgeons Group in conjunction with regional breast screening QA co-ordinators and QA surgeons who are responsible, in turn, to Regional QA directors. The lead clinician in each breast unit is responsible for the accuracy of data submitted via the regional office.

Data were collected for all of the screen detected breast cancers in the United Kingdom in four separate annual audits covering the periods 1996/97, 1997/98, 1998/99 and 1999/2000. Data were obtained on every aspect of the patient journey - from diagnosis to surgical treatment. Through the quality and completeness of these data, the BASO audit has been able to track and record major changes in clinical practice and in the management of screen detected breast cancers.

The aim of this paper is to present data on several key clinical outcome measures to demonstrate the extent to which change has been achieved over the four-year period between April 1996 and March 2000. In the course of the presentation data will be provided on how the management of breast cancer has changed and what factors have influenced this change. Emphasis will be placed on pre-operative diagnosis, axillary lymph node status, surgical caseload, surgical treatment of invasive and non-invasive breast cancers and waiting times.

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Nation-wide breast cancer screening in women 70-75 years of age: the upper age limit?

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Background: Empirical evidence of breast cancer mortality reduction due to breast cancer screening in women above 70 years is limited. In the Netherlands, since 1998 biennial screening mammography for women aged 50-69 has been extended to women aged 70-75. This decision was based on model analyses that showed that screening would give a reasonable balance between favourable and unfavourable effects up to at least 75 years.

Methods: We used the 1998-1999 data to compare the first results of screening women aged 70-75 with those of women aged 50-69 and with model simulated detection rates.

Results: Of the 174,247 women aged 70-75 invited in 1998-1999, 64% participated. Of 108,453 screening examinations performed, 21% were initial screens. In more than two thirds of the subsequent screens, the screening interval was longer than 2.5 years. Mean referral rate was 19.4 per 1000 women screened, and mean cancer detection rate 11.1 per 1000. In women aged 50-69 years, corresponding figures were 9.7 and 4.1 per 1000, respectively. Observed 1-year age-specific detection rates were closer to a model variant of higher simulated detection rates, assuming a continuous increase of sojourn times of breast tumours with age.

Conclusions: The first results on attendance and detection rates in screening women aged 70-75 support the expectations set beforehand. The observed outcomes confirm a continuously increasing preclinical sojourn time of breast tumours above the age of 65, leading to an increase in detection of clinically less important cancers. At present, 75 years of age can be regarded as the correct upper age limit.

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Cost-effectiveness of clinical breast examination in breast cancer screening

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Objective: To assess the effectiveness and cost-effectiveness of clinical breast examination (CBE) when implemented in a nation-wide breast cancer screening programme; the usefulness of adding CBE to mammography screening is also evaluated.

Material and Methods: Data from the Canadian National Breast Screening Study-2 (CNBSS-2) and from the National Breast and Cervical Cancer Early Detection Program (NBCCEDP) were used to derive stage-specific sensitivities of CBE. Demographical, epidemiological and screening characteristics of the palpation arm of the CNBSS-2 were incorporated in an existing breast cancer screening model. Stage-specific sensitivities of CBE were estimated by comparing the observed data with expected model data. These sensitivities were used to predict the costs and effects of different CBE screening policies in the Netherlands for women aged 50 to 74 with a 1- or 2-year interval.

Results: The overall relative sensitivity of CBE compared to mammography in combination with CBE varies from 49% in the CNBSS-2 to 34% for asymptomatic women in the NBCCEDP. Estimated CBE sensitivity ranges from 0.32 to 0.5 for stage T1c and from 0.47 to 0.97 for stage T2+. A biennial CBE screening programme in the Netherlands will prevent 384 to 610 breast cancer deaths per year of screening, compared to 1,155 in the nation-wide biennial mammography screening programme. The cost-effectiveness ratio varies from Dfl. 3,150 to 6,757 per life year gained, whereas this is 4,859 in the mammography screening programme. Annual CBE screening is more effective, but less cost-effective. Adding CBE to the Dutch screening programme is estimated to prevent 63 extra breast cancer deaths per year of screening, but the additional cost per additional life year gained is Dfl. 30,180.

Conclusions: The CNBSS-2 palpation arm shows high CBE sensitivities; the performance of CBE in a community setting is likely to be lower. Biennial CBE screening programmes can be cost-effective, but are considerably less effective than high-quality biennial mammography screening.

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MRI screening for breast cancer in women with high familial risk

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Introduction: One of the strategies to reduce the risk of breast cancer (BC) death in women with a familial or genetic predisposition is intensive surveillance. The value of regular surveillance in these women is currently being investigated in the Dutch MRI screening study (MRISC). In this study different screening modalities (mammography and MRI) are compared. We present patient characteristics and some first study results.

Material and Methods: The study has a prospective non-randomized multicenter design. Participating centers are 6 family cancer clinics in cancer centers and university hospitals. Included are BRCA 1 or 2 gene mutation carriers and women with more than 15% lifetime BC risk. The surveillance scheme consists of a physical breast examination once every 6 months and a mammography and MRI once a year.

Results: From November 1999 until October 2001, more than 1700 women were registered. The non-compliance rate was about 10%. The first 1252 women have a mean age of 41 years (range 21–70); 194 women (15%) are BRCA1/2 gene-mutation carriers, 56% have a lifetime risk of 30–50% and 29% have a life time risk of 15–30% to develop BC. Until October 2001, 3x DCIS, 12 invasive breast carcinomas and 1 non-Hodgkin tumor in the breast were found in the 1700 women registered with a total follow-up of 1850 women years. The overall incidence rate of BC is 0.8% per year. In total 114 women have had cytological or histological investigation, making the positive predictive value of the study protocol 15%.

Conclusion: The amount of high risk women, the low non-compliance rate and the high incidence of BC make BC screening of women at high familial/genetic risk by MRI feasible in the context of a national study.