Saturday, 27 March 2010 11:00–13:00

KEYNOTE SYMPOSIUM

Best and practice changing abstracts

1N Invited

Evaluation of the breast cancer screening programme in Southwest Netherlands: a case–control study

S. Otto[1], R. Boer[1], M.J.M. Broeders[2], J. Fracheboud[1], J. Reijerink-Verheij[3], J.D.M. Otten[2], A.L.M. Verbeek[2], H.J. de Koning[1]. *[1]Erasmus MC, Public Health, Rotterdam, The Netherlands; [2]University Medical Centre Nijmegen, Epidemiology & Biostatistics, Nijmegen, The Netherlands; [3]Stichting Bevolkingonderzoek Borstshy;kanker Zuidshy;west Nederland (SBBZWN), Screening Organization, Vlaardingen, The Netherlands*

Background: Previously, we demonstrated, by means of trend analyses, a downward trend in the Dutch breast cancer mortality rates until 2001, which started immediately after the initiation of mammography screening. Recently we started a case–control study for the evaluation of the Dutch breast cancer screening program. The results of the Southwest region are presented for the period 1990–2003.

Methods: Data of the screening organization of Southwest region (where screening was implemented in the period 1990–1996) on date of birth, invitations, screening visits, and death, and screening status was used. Eligible women were those aged 49−75 years at first invitation, who were ever invited for mammography screening between 1990–2003 and gave permission for exchange of their data with the cancer registry, GP or for linkage for statistical purposes. The attendance rate at the initial screenings among the eligible women varied between 59% and 88%. Data on date of diagnosis, TNM-stage and therapy of all women diagnosed with breast cancer were obtained from the Comprehensive Cancer Registry Rotterdam. Cases were women diagnosed with breast cancer after the first invitation and died of breast cancer. Five controls were matched to each case based on age at the case's last invitation (index), year of birth, year of first invitation and number of invitations before and up to the index invitation. All controls were alive at the time of death of the matched case and breast cancer free at case's diagnosis. Screening was defined as attending the mammography unit after receipt of a screening invitation. The odds ratios, ORs, and respective 95% confidence interval, CI, of the matched case–control sets were calculated by conditional logistic regression.

Results: There were 755 cases and 3,739 matched controls, aged 49−75 at first invitation: 36% of the cases were never screened (29.9% were screen-detected and 34.6% were interval cancers) compared to 18% of the controls. Among the cases, the proportion of localized tumors (stage 0−I) was considerably higher in women with screen-detected tumors (34.1% versus 10.7% detected between intervals and 10.4% never-screened). The OR of the association between breast cancer mortality and attending screening during the 4 years preceding the index was 0.44 (95% CI 0.37–0.53) and 0.48 (95% CI 0.41–0.58) for attending the last (index) invitation. Correcting for the method of Duffy et al., using their published data, yielded ORs of 0.66 (95% CI 0.47–0.92) and 0.72 (95% CI 0.52–1.00), respectively.

Conclusion: The results of the present case–control study suggest reductions of 52−56% (28−34% after correction for selection bias) in breast cancer mortality among women who were invited and attended the mammography screening program in the Southwest region of the Netherlands between 1990–2003.

2N Invited

Model based predictions show higher mortality reduction for the UK Breast Screening Frequency Trial: no definitive answer on the optimal screening frequency

N.T. van Ravesteyn[1], E.A. Heijnsdijk[1], G. Draisma[1], H.J. de Koning[1]. *[1]Erasmus MC, Public Health, Rotterdam, The Netherlands*

Background: The UK breast screening frequency trial did not show a significant difference in breast cancer mortality between screening every year (study group) and screening every three years (control group). In the present study, the UK frequency trial is simulated using a micro simulation model in order to clarify the results of the trial and predict the effect on breast cancer mortality of screening every year vs. once every three years.

Material and Methods: The MISCAN breast cancer model was used to simulate the trial. Age specific breast cancer incidence rates for the years 1975–1988 (before the implementation of a nationwide screening program in the UK) were used to estimate age specific disease onset parameters for the simulation model. The predicted number of invasive cancers in each group by size and the number of breast cancer deaths in each group from cancers diagnosed in the trial up to the year 2006 were compared with the results of the trial.

Results: The total numbers of invasive cancers detected was predicted accurately for the study group and somewhat too high for the control group. Although the predicted difference in size distribution between the control and study group was larger than observed, the predicted numbers of deaths in both groups were close to the observed numbers. The predicted difference between the number of deaths in the control group and the study group was larger than the observed difference, corresponding to a predicted relative risk of 0.84, which is within the confidence interval of the reported relative risk (0.63–1.37).

	Observed				Predicted			
	Study		Control		Study		Control	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Tumour size (mm)								
1−20	170	(73)	134	(66)	194	(82)	153	(65)
21−50	59	(25)	64	(32)	40	(17)	72	(31)
50+	4	(2)	5	(2)	3	(1)	9	(4)
unknown	2		5		0		0	
Total number of invasive cancers	235		208		238		234	
Deaths	50		55		45		54	
RR	0.93 (0.63–1.37)				0.84			

Conclusions: Although limited data was available to estimate parameters for the micro simulation model, the predicted relative risk is within the reported confidence intervals. The predicted relative risk of 0.84 indicates that the actual mortality reduction resulting from shortening the screening interval might be larger than currently reported. The UK frequency trial seems to have a lack of power to detect a difference in breast cancer mortality between the two groups and therefore does not provide a definitive answer on the optimal screening frequency.

3N Invited

Stage migration after introduction of sentinel lymph node dissection in breast cancer treatment in Denmark: a nationwide study

T. Filtenborg Tvedskov[1], M.B. Jensen[2], E. Balslev[3], B. Ejlertsen[4], N. Kroman[1]. *[1]Copenhagen University Hospital, Department of Breast Surgery, Copenhagen, Denmark; [2]Copenhagen University Hospital, Danish Breast Cancer Cooperative Group, Copenhagen, Denmark; [3]Herlev University Hospital, Department of Pathology, Copenhagen, Denmark; [4]Copenhagen University Hospital, Department of Oncology, Copenhagen, Denmark*

Background: Sentinel lymph node dissection (SLND) was introduced in breast cancer treatment in Denmark between 1997 and 2004. It has made more extensive lymph node examinations possible. As a result more metastases are found. This phenomenon is called stage migration. The purpose of the present study was, based on a large and nationwide data material, to estimate the magnitude of stage migration and its therapeutic consequences after introduction of SLND in breast cancer treatment in Denmark.

Materials and Methods: We retrieved information on nodal status, tumour size, age at diagnosis, type, grade and hormone receptor status from the Danish Breast Cancer Corporative Group database. The distribution of lymph node metastases and its consequences on risk-allocation was compared between 1993–1996 and 2005–2008 in a univariate and a multivariate analysis.

Results: We included a total of 24051 patients in the study; 10231 patients from the first period and 13820 patients from the second period. The proportion of patients having macrometastases was not significantly different in the 1993–1996 and the 2005–2008 cohorts, 40.5% and 40.7% respectively. However, patients having only micrometastases increased from 5.1% to 9.0% ($P < 0.0001$). The results did not vary significantly between the different Danish departments of pathology. According to the risk-allocation of today only a minor increase, from 7.8% to 8.8%, was seen in patients offered adjuvant treatment due to positive nodal status as the only high risk factor. In addition, the multivariate analysis showed that negative hormone receptor status was significantly associated to negative nodal status.

Conclusions: Introduction of SLND in breast cancer treatment in Denmark has resulted in a 4% increase in the proportion of node positive patients. This increase is exclusively caused by identification of more micrometastases. However, the stage migration has only minor therapeutic consequences according to adjuvant treatment because nodal status is losing its significance in risk-allocation due to introduction of other high risk factors. Furthermore, we showed that hormone receptor negative patients have a lower risk of lymph node metastases compared to hormone receptor positive patients when adjusted for confounders, despite the fact that these patients are generally considered having more aggressive disease. This