500   Poster discussion

Is risk-reducing mastectomy in BRCA1/2 mutation carriers with a history of unilateral breast cancer beneficial with respect to distant disease free survival and overall survival?

B.A.M. Heemskerk-Gerritsen[1], M.J. Hooning[1], A. Jager[1], M.M.A. Tilanus-Linthorst[2], C.C.M. Bartels[2], A. van den Ouweland[3], J.M. Collée[3], M. Menke-Pluimers[2], C. Seynaeve[1]. [1]Erasmus Medical Center, Medical Oncology, Rotterdam, The Netherlands; [2]Erasmus Medical Center, Surgical Oncology, Rotterdam, The Netherlands; [3]Erasmus Medical Center, Clinical Genetics, Rotterdam, The Netherlands

Introduction: Risk-reducing mastectomy (RRM) in BRCA1/2 mutation carriers with a history of unilateral breast cancer (BC) significantly reduces the risk of developing contralateral BC (CBC). However, the outcome regarding distant disease free survival (DDFS) and overall survival (OS) is insufficiently known.

Methods: The efficacy of RRM on DDFS and OS was studied in 375 BC patients (283 BRCA1, 92 BRCA2). Characteristics and FU information up to December 31, 2008, were extracted from the medical records. Eventually 111 BRCA1 and 33 BRCA2 mutation carriers underwent RRM. Women contributed person-years of observation (PYO) to the non-RRM group from the date of the first visit at the clinic or primary BC (PBC) diagnosis (whichever came last) to the date of diagnosis of metastatic disease, death, RRM, or last FU. Contribution of PYO to the RRM group started at the date of RRM until similar endpoints as described for the non-RRM group.

Results: Regarding the PBC, no differences in age at diagnosis, hormone-receptor status, and adjuvant systemic treatment were observed between the non-RRM and RRM group. Distribution of TNM stages 0, I, II and III, was 4%, 37%, 46% and 13%, respectively, in the non-RRM group, versus 4%, 51%, 38% and 7% in the RRM group (p < 0.05). More women in the RRM group underwent risk-reducing salpingo-oophorectomy (RRSO; 74% versus 46% in the non-RRM group; p < 0.001). With a mean FU op 7.4 years, 72 CBC cases were observed in the non-RRM group, while no CBC occurred after RRM. During 1956 PYO, 54 patients in the non-RRM group developed metastatic disease versus 16 patients during 655 PYO in the RRM group, resulting in incidence rates of 0.028 and 0.024, respectively. Concerning the OS, 51 women died during 2092 PYO in the non-RRM group, versus 15 women in the RRM group during 692 PYO, resulting in mortality rates of 0.024 and 0.022, respectively. These data were comparable for BRCA1 and BRCA2 mutation carriers. The effect of RRM on DDFS and OS is being analyzed, taking into account the influence of different variables (e.g. tumor characteristics, mutation status, RRSO), and will be presented at the meeting.

Conclusion: RRM in BRCA1/2 mutation carriers with a history of unilateral BC does not seem to improve DDFS and OS, despite the strong reduction of CBC occurrence. Further research is warranted to identify a set of prognostic factors enabling selection of subgroups of BC patients who possibly may benefit from RRM with respect to DDFS and OS.

501   Poster discussion

The quality indicator 'tumour positive margin rate after breast conserving surgery': a valid assessment of hospital performance?

G. Gooiker[1], L. Veerbeek[2], L.G.M. van der Geest[2], T. Stijnen[3], J.W.R. Dekker[1], J.W.R. Nortier[4], A. Marinelli[5], H. Struikmans[6], M.W.J.M. Wouters[1], R.A.E.M. Tollenaar[1]. [1]Leiden University Medical Centre, Surgery, Leiden, The Netherlands; [2]Comprehensive Cancer Center West, Cancer registry, Leiden, The Netherlands; [3]Leiden University Medical Centre, Medical Statistics, Leiden, The Netherlands; [4]Leiden University Medical Centre, Medical oncology, Leiden, The Netherlands; [5]Medical Center Haaglanden, Surgery, the Hague, The Netherlands; [6]Medical Center Haaglanden, Radiotherapy, the Hague, The Netherlands

Background: The demand for comparative data of hospital performance and quality of care is growing, but there is solid criticism on the validity of quality indicators and the presentation of the results.

The quality indicator 'tumour positive margin rate after breast conserving surgery for breast neoplasm' is used by two large performance measurement systems in the Netherlands: the Dutch Health Care Inspectorate and the 'Visible Care' program of the Ministry of Health, Welfare and Sport. Both systems use different definitions for 'tumour positive margin'.

Our aim is to determine if the quality indicator 'tumour positive margin rate after breast conserving surgery for breast neoplasm', measures the performance of hospitals consistently and independently of the utilization of different definitions for 'tumour positive margin', differences in casemix, taking statistical random variation into account.

Materials and Methods: We retrieved data of all 762 patients who underwent breast conserving surgery for a breast neoplasm, between July 1 2007 and June 30 2008 in one of the nine affiliated hospitals of the Comprehensive Cancer Centre West (CCCW) in the Netherlands. We compared two indicators for 'tumour positive margin' used by performance measurement systems in the Netherlands, with the reresection rate. We identified riskfactors for tumour margin positivity and reresection with logistic regression. We presented the results of the individual hospitals in a funnelplot, using 95% and 99% confidence limits around the standard.

Results: Depending on the definition, the tumour positive margin rate of the total group varied from 11% to 21% and of individual hospitals varied up to 19%. In situ carcinoma was associated with higher tumour positive margin rates (OR 1.76 [CI 1.06–2.92]). The results of individual hospitals differed significantly (P < 0.001). However, the funnelplot showed little variation across the hospitals, except random variation. Moreover, the assessment of hospital performance depended on the used definition and casemix correction. There were discrepancies between the tumour positive margin rates and the reresection rate, indicating differences in interpretation of 'tumour positive margin'.

Conclusions: The demand for comparative data of hospital performance and quality of care is growing, but for a reliable comparison of hospitals clear definitions and adjustment for casemix are needed. The lack of identical definitions for the quality indicator 'tumour positive margin rate' and the lack of casemix correction undermine the validity of the indicator. Clear definitions, standardized reporting and the use of funnelplots can improve healthcare assessment.

502   Poster discussion

Survival in young women diagnosed with breast cancer. Does pregnancy status make a difference?

A. Ives[1], C. Saunders[1], M. Bulsara[2], J. Semmens[3]. [1]The University of Western Australia, School of Surgery M507, Crawley, Australia; [2]Notre Dame University, Biostatisitics, Fremantle, Australia; [3]Curtin University of Technology, Population Health Research, Bentley, Australia

Background: Women diagnosed with gestational breast cancer (i.e. pregnant or within twelve months postpartum) are known to have poor survival when compared to other young women diagnosed with breast cancer. Less is known about how the pregnancy status of women diagnosed breast cancer affects survival. The aim of this cohort study was to determine what affect the pregnancy status of young women at the time they were diagnosed with breast cancer (no associated pregnancy, pregnant or postpartum) had on survival.

Methods: The cohort of women diagnosed with breast cancer in Western Australia when aged less than 45 years between 1 January 1982 and 31 December 2003 was identified. A Cox's proportional hazards regression model was developed which included their age at diagnosis, histological grade, disease stage, lymph node status, pregnancy status (no associated pregnancy, pregnant or postpartum), length of survival and death status. Overall survival was calculated and defined as the time from diagnosis to the date of death or censor date of 31 December 2007.

Results: In the cohort of 2752 women; 182 were diagnosed with GBC (55 when pregnant 127 post partum). In the model, increased histological tumour grade and disease stage and positive lymph node status led to poor survival for all women in the cohort. Gestational breast cancer postpartum cases, however, were found to have a 48% increased risk of death (HR 1.48, 95% CI 1.09, 2.02, p = 0.012) compared to non-gestational breast cancer cases. Gestational breast cancer cases who were pregnant at diagnosis, however, had only a 3% increased risk of death (HR 1.03, 95% CI 0.66, 1.61, p = 0.88) compared to non-GBC cases.

Conclusion: Women who were diagnosed with GBC postpartum were more likely to die than other young women diagnosed with breast cancer where as women who were pregnant at diagnosis had s a minimal increased risk. This factor suggests that the cumulative effect of pregnancy±breast feeding plays a role in breast cancer prognosis and needs further investigation.

503   Poster discussion

Is duration of breastfeeding related to risk of different breast cancer subgroups?

S. Butt[1], S. Borgquist[2], L. Anagnostaki[3], G. Landberg[3], J. Manjer[1]. [1]Institution of Clinical Sciences, Dept of Surgery, Malmö University Hospital, Sweden; [2]Division of Oncology, Dept of Clinical Sciences, Lund University Hospital, Sweden; [3]Centre for Molecular Pathology, Dept of Laboratory Medicine, Malmö University Hospital, Sweden

The aim of the present study was to examine duration of breastfeeding in relation to the risk of different subgroups of breast cancer. A prospective cohort, The Malmö Diet and Cancer study, including 17035 women were followed during a mean of 10.2 years and a total of 622 incident breast cancers were diagnosed.

Tumours were classified regarding invasiveness, tumour size, axillary lymph node status, Nottingham grade, tumour proliferation (Ki67), HER2, cyclin D1 and p27, WHO type and hormone receptor status. Duration of breastfeeding was measured using mean time of breastfeeding per child. Duration was categorised in quartiles using the lowest as the reference group (<2.2, $\geqslant$2.2−<4.0, $\geqslant$4.0−<6.2 and $\geqslant$6.2 months). Relative risks, with 95% confidence intervals, were obtained using a Cox's proportional hazards analysis adjusted for potential confounders.

Overall risk for breast cancer was similar in all quartiles of breastfeeding. In women with long ($\geqslant$6.2 months) duration of breastfeeding, there was a statistically significant risk of grade III tumours, 1.87 (1.05–3.34), and tumours with high Ki67, 2.15 (1.14–4.05). Longer breastfeeding was also associated with high cyclin D1 expression (1.29: 0.61–2.71), low p27 expression (1.55: 0.95–2.54), and ERα negative tumours (1.62: 0.70–3.74), but these associations did not reach statistical significance. In addition to mean time of breastfeeding per child, all results were similar when total time of breastfeeding and time related to the first child were used as exposures.

We conclude that long duration of breastfeeding was associated with more unfavourable breast tumour characteristics.

---

504   Poster discussion
Safety of pregnancy in breast cancer survivors: a meta-analysis

H.A. Azim Jr[1], L. Santoro[2], N. Pavlidis[3], F.A. Peccatori[4]. [1]Jules Bordet, Medical Oncology, Brussels, Belgium; [2]European Institute of Oncology, Epidemiology and Biostatistics, Milan, Italy; [3]University of Ioannina, Internal Medicine, Ioannina, Greece; [4]European Institute of Oncology, Oncology/Hematology, Milan, Italy

Background: Breast cancer (BC) is the most common malignant tumour affecting women during their childbearing period. With the decline of BC mortality and rising trend of delaying pregnancy to later in life, it is often that BC survivors consider getting pregnant. However, some concerns have been raised regarding the safety of this approach though. Hence we conducted a meta-analysis to evaluate the effect of pregnancy on survival of patients with history of BC.

Material and Methods: A MEDLINE and EMBASE search was performed by two authors with no time or language restriction using the search terms "breast cancer, pregnancy" and "breast cancer, gestation". Eligible studies had to provide overall survival (OS) analysis, hazard ratio (HR) and 95% confidence internal (CI) as summary statistics. When not directly available, HR and 95% CI were indirectly calculated from the reported number of deaths, or from the reported comparison between median survival with the corresponding P-value, or from the survival curves. Heterogeneity of the effect across studies was assessed by the x^2 and I^2 tests. The method of Macaskill was used for assessing publication bias. In this analysis no distinction was made between the various measures of association (relative risk, rate ratio, risk ratio, HR). Pooling of data was performed using the mixed effect model.

Results: 14 trials published between 1970 and 2009 met the inclusion criteria (1417 pregnancy and 18059 controls; Table 1). Patients who got pregnant following BC diagnosis had significantly better survival compared to women who did not get pregnant (HR 0.58; CI: 0.49–0.68). There was no evidence of heterogeneity as estimated by x^2 test (20.2; p = 0.09) and I^2 test (35.6). There was no evidence of publication bias (p = 0.22).

Table 1: Studies comparing overall survival in pregnant and non-pregnant patients

Study	Year of publication	No. pregnant	No. non-pregnant controls	Study design	Matching criteria for choosing controls
Cooper	1970	28	56	Matched CC	stage (I/III); N(+/−); age
Mignot	1986	68	136	Matched CC	age, year of tumor treatment, TNM status, histology
Ariel	1989	46	900	Population based	NA
Sankila	1994	91	471	Matched CC	stage (I/III); age; year of BC diagnosis
Malamos	1996	21	222	Hospital based	NA
Lethaby	1996	14	334	Population based	NA
Velentages	2000	53	265	Matched CC	stage of disease
Birgisson	2000	14	33	Matched CC	tumor size, nodal status, year of BC diagnosis
Gelber	2001	94	188	Matched CC	nodal status, tumor size, age, year of BC diagnosis
Blakely	2003	47	323	Hospital based	NA
Mueller	2003	329	2088	Matched CC	age, race/etnicity, year of BC diagnosis, stage
Ives	2007	123	2416	Population based	NA
Kroman	2008	371	9865	Population based	NA
Largillier	2009	118	762	Hospital based	NA
Total		1417	18059		

NR: not reported; CC: Case-Control; BC: breast cancer; NA: Not applicable.

Conclusion: On the contrary of what is perceived; pregnancy in BC survivors is not detrimental on survival but seems to be associated with a protective value. Several immunological and endocrinal theories could explain this finding.

---

505   Poster
Improving the quality and efficiency of breast cancer follow-up: results from an RCT

M.L. Kimman[1], C.D. Dirksen[2], A.C. Voogd[3], P. Falger[4], P. Hupperets[5], A. Kessels[2], K. Keymeulen[6], B. Gijsen[7], P. Lambin[1], L.J. Boersma[1]. [1]Maastricht University Medical Centre, Department of Radiation Oncology (Maastro Clinic) GROW research institute, Maastricht, The Netherlands; [2]Maastricht University Medical Centre, Department of Clinical Epidemiology and Medical Technology Assessment, Maastricht, The Netherlands; [3]Maastricht University Medical Centre, Department of Epidemiology, Maastricht, The Netherlands; [4]Maastricht University Medical Centre, Department of Medical Psychology, Maastricht, The Netherlands; [5]Maastricht University Medical Centre, Department of Medical Oncology, Maastricht, The Netherlands; [6]Maastricht University Medical Centre, Department of Surgery, Maastricht, The Netherlands; [7]Comprehensive Cancer Centre, Rehabilitation, Maastricht, The Netherlands

Background: A multicentre randomised clinical trial (RCT) was performed among early breast cancer patients to investigate the impact of nurse-led telephone follow-up (f-up) and a short educational group programme (EGP) on quality of life (QoL) and resource use.

Material and Methods: Between 2005 and 2008, 320 breast cancer patients were randomised into one of four f-up strategies for their first year after treatment: 1. three-monthly hospital f-up and mammography at one year after treatment; 2. three-monthly nurse-led telephone f-up and mammography at one year; 3. arm 1 with EGP; 4. arm 2 with EGP. The EGP consisted of two group-sessions, led by a breast care nurse and health psychologist, in which physical and psychosocial sequelae of diagnosis and treatment were discussed. The primary endpoint of the trial was health-related QoL as measured by the EORTC QLQ-C30. Additionally, anxiety, feelings of control, patient satisfaction and resource use were measured at randomisation, three, six, and 12 months after inclusion. Linear mixed models for repeated data were used for the analyses. Data were analysed according to the intention-to-treat principle.

Results: Nurse-led telephone follow-up did not result in a loss of quality of life (p = 0.42), nor did it increase feelings of anxiety (p = 0.42). Additionally, it did not negatively (or positively) affect feelings of control (p = 0.32), and general patient satisfaction (p = 0.38). Patients in the telephone group showed a significant higher satisfaction with access of care (p = 0.02). Resource use was considerably lower in the telephone group. The EGP was well-received by patients, it provided new information, but did not significantly improve QoL (p = 0.86), or affect other outcome measures.

Conclusions: Nurse-led telephone f-up seems an appropriate model of f-up care for early breast cancer patients. An EGP does not increase QoL, but may be appropriate to meet information needs early in the f-up. However, instead of trying to find a one-size-fits-all approach, we propose an individualised tailored approach in which the patient and health care professional make a shared and informed decision on the basis of evidence of actual benefits and risks, and an assessment of the patient's needs and preferences.

Friday, 26 March 2010   **18:15–19:15**

POSTER SESSION
Epidemiology, prevention, follow-up, management and care

---

506   Poster
Locoregional recurrence in breast cancer patients: a population-based five year follow-up study

V.K.Y. Ho[1], M. van der Heiden-van der Loo[1], P.H.M. Peeters[2]. [1]Comprehensive Cancer Centre Middle Netherlands, Cancer Registration & Research, Utrecht, The Netherlands; [2]University Medical Centre Utrecht, Julius Centre for Health Sciences and Primary Care, Utrecht, The Netherlands

Background: Conservative surgery for early breast cancer patients, if adequately performed and followed by radiotherapy, should lead to a