

517

Poster

Body mass index and breast cancer risk in Korea: meta-analysis

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Background: The incidence of breast cancer in Korea is rapidly increasing recently. Body mass index (BMI, kg/m²) is one of the risk factors of breast cancer, especially in the postmenopausal women. In Korea, about sixty percents of breast cancer patients are premenopausal status. So the role of obesity would be different to the western country. We undertook a meta-analysis to verify the relation between BMI and breast cancer risk according to the menstrual status.

Material and Methods: We retrieved the Korean literature using PubMed (<http://www.pubmed.org/>) and KoreaMed (<http://www.koreamed.org/>) database concerning the relationship between BMI and breast cancer in Koreans from 1994 to 2008. BMI more than 24 kg/m² was categorized as high. The overall effect size was represented by common odds ratio (OR). Heterogeneity test, sensitivity test and Egger's test of publication bias was conducted.

Results: The materials were fourteen studies with a total 5,534 breast cancer cases and 6,333 controls. The overall common OR (95% confidence interval) was 1.42 (1.25–1.61). The OR of postmenopausal women was 1.41 (1.19–1.68) and the OR of premenopausal women was 1.34 (1.13–1.59).

Conclusions: This study shows that the high BMI is the risk factors of breast cancer in Korea, regardless of menopausal status.

518

Poster

A novel support tool for Breast Multidisciplinary Meetings: an advanced evidence based computer decision support technology

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Background: Breast multidisciplinary meetings (MDMs) provide the key forum where all important patient management decisions are taken. MDMs are widely accepted in many countries as the standard of care however there is an urgent need for better tools for supporting and monitoring these heavily loaded meetings to maximize their efficacy. Advanced computerised decision support (CDS) technology could offer many of these services to actively support busy MDMs. We present a novel breast MDM support tool which integrates a CDS system into an electronic patient record to assist breast multi disciplinary team in making evidence based, transparent treatment decisions.

Methods: The Multi-disciplinary meeting Assistant and Treatment sElector (MATE) is a tool designed to assist breast clinicians in making management decisions for their patients in MDM. MATE uses logic based computational framework to provide a clinical guideline-based decision support system for breast cancer MDM. MATE evaluates patient's clinical facts and suggests optimal management options according to incorporated national and international clinical guidelines. The evidence base used in MATE can be updated as and when new evidence is published. MATE recommendations are not binding and the final decision is taken by respective breast Multidisciplinary MATE facilitates the flexible conduct of MDM. Additionally, it highlights if the patient is eligible to take part in any local, national or international clinical trials. MATE is implemented in the breast unit of Royal Free hospital, London for its pilot testing. In the evaluation study, the data of 500 consecutive breast patients presented at our MDM along with their documented MDM recommendations are entered in MATE. MDM recommendations and MATE suggestions are analysed.

Results: MATE system is able to suggest the treatment recommendations in concordance with breast MDT in majority of the cases (89%). MATE also identified 60% more patients suitable for ongoing clinical trials. Deviations that occur specially in unaided MDMs can be minimised using electronic data capture and decision support system like MATE. MATE also significantly improved the transparency and the documentation of MDM outcomes.

Conclusion: This evaluation study has shown the feasibility of implementing MATE into MDM and its potential to improve certain aspects of MDM by helping overburdened clinicians. Further evaluations of MATE in a randomised controlled trial are under way.

519

Poster

Local recurrence as outcome indicator in breast cancer care: a population based study

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Background: Quality of care indicators defined by professionals have been adopted by the Netherlands Health Care Inspectorate (IGZ). One of the outcome indicators in the treatment of breast cancer care is *Local recurrence of breast cancer within five years of initial diagnosis*. In this study we present the results on this outcome indicator.

Material and Methods: All breast cancer patients diagnosed in 2003 with primary breast cancer who underwent surgery were extracted from the Netherlands Cancer Registry. Patients with distant metastasis at diagnosis or macroscopic tumor residue after surgery were excluded. The remaining 10,284 patients were assigned to the hospital of surgical treatment. Trained registration clerks retrieved data on follow up from medical records. 384 patients were excluded, 162 (1.6%) because of lack of information, 222 (2.1%) because of definition of the indicator. The health care outcome indicator was calculated as defined by IGZ: the number of local recurrences divided by the total number of patients treated in the hospital, separately for patients with breast conserving surgery and patients with mastectomy. The results are presented in forest plots and funnel plots. These plots show for every hospital the proportion of local recurrences (and the confidence interval) in relation to the overall proportion.

Results: In total 9990 patients treated in 99 hospitals were included in the analyses. Over half of the patients underwent breast conserving surgery (5314; 54%). This varied over hospitals from 20% to 90%. The number of patients treated per hospital varied from 15 to 275.

In 266 patients a local recurrence occurred (2.7%, 95% CI 2.4–3.0). For patients with breast conserving surgery the proportion was 2.4% (95% CI: 2.0–2.8). For patients with mastectomy the proportion was 3.0% (95% CI: 2.7–3.57). Five hospitals had an higher proportion of local recurrences than expected based on the average after breast conserving surgery. Seven hospitals had an higher than expected proportion of local recurrences after mastectomy.

Conclusions: The local recurrence rate varies between hospitals. Only a few hospitals have a significantly higher number of recurrences than expected, due to the small number of patients per hospital and the low number of recurrences. However, this can be expected when testing 99 hospitals based on a 95% confidence interval. Therefore, the proportion of recurrences seems of little value as a quality of care indicator.

520

Poster

Obesity as a risk factor of earlier occurrence of contralateral breast cancer

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Background: Obesity is a risk factor of many diseases, such as: diabetes, hypertension or ischaemic heart disease. It also increases the risk of breast cancer for women over 50 years of age. Recent investigations indicated that proper life style and decrease of body weight after breast cancer treatment may decrease the risk of disease relapse.

Bilateral, metachronous breast cancer seems to be a good model for analysing the relationship between obesity and breast cancer.

Purpose: To verify whether contralateral breast cancer in obese patients appears earlier than in women with normal body mass index. Additionally, to analyse selected pathological and clinical features present in both groups.

Material and Methods: History of 135 patients with bilateral breast cancer was analysed retrospectively. Metachronous breasts were detected in 95 cases. They were divided into three groups according to the universally applied criteria: normal weight (BMI <25kg/m²), overweight (BMI 25–29.9 kg/m²), obesity (BMI ≥ 30 kg/m²).

Immunostaining for expression of estrogen and progesterone receptors was performed using monoclonal antibodies from DakoCytomation. The EnVision detection system was applied. HER2 status was analysed using HerceptTest TM (IHC), and IHC2+ results were confirmed with FISH test.

Results: From all groups with bilateral breast cancer (n=135), an overweight condition was found in 36%, and obesity in 23% of patients. Patients from the obesity subgroup more often had tumors with positive expression of estrogen and progesterone receptors and with overexpression of HER2.

In the group with metachronous cancers (n=95) 44% of patients had normal weight. In this group, cancer of the second breast was detected

after (on the average) 78 months. In the obesity group (20% of patients) cancer of the second breast was diagnosed after 46 months, that is 30 months earlier than in the normal body weight group patients.

Conclusions: Patients after breast cancer treatment should be advised to keep a normal body mass index. Doing that may reduce the risk or may delay the development of contralateral breast cancer.

521 Poster Parity and breast feeding are preventive measures for breast cancer in Iranian women

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Background: Breast cancer is the most prevalent cancer in Iranian women and the second cause of cancer related death after stomach cancer. Many factors are defined as preventive or predicting factors for it. Among them the parity and breast feeding are controversial issues. We conducted this case control study to find out the relation of parity and breastfeeding with breast cancer.

Material and Methods: The numbers of case and control group were 376 and 425 patients. A structured questionnaire that covered demographic criteria and breast cancer risk factors were filled up for each group. The two groups were matched by demographic variants, some reproductive issue and socioeconomic status. Odds ratio and 95% confidence intervals were computed as measures of association from the logistic models.

Results: Comparing ever vs. never breast feeding showed that it is significantly protective against breast cancer (P-value=0.0001, OR = 0.39, CI=0.27–0.56). The trend of breastfeeding was significantly protective; this effect was essentially present in mothers who had breastfed until 48 months. To find out a meaningful duration with an effective cut of point, we calculated the effect of breastfeeding for a child comparing two period of less than 18 months and equal or more than 18 until 24 months, which statistically was significant (p-value=0.037, OR = 0.7, CI = 0.5–0.98) for duration of 18–24 months per child.

Conclusions: Base on the hypothesis of anatomical and physiological change in breast during pregnancy, parity and breastfeeding; we showed that full term pregnancy and parity significantly reduced the risk of breast cancer, the number of children should be limited to 1–3, and the best cumulative duration of breastfeeding is 25–36 months, never breastfeeding is a great risk comparing with ever breastfeeding. The duration of 18–24 months of breastfeeding per child was the best duration and most effective against breast cancer among Iranian women.

522 Poster Prevalence of TP53 germ-line mutations in patients with early-onset breast cancer and different types of family history

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Background: Mutations in *BRCA1*, *BRCA2*, and *TP53* genes underlie familial and early-onset breast cancer, conferring a lifetime breast cancer risk of 43–85%. We aimed to estimate the contribution of *TP53* germ-line mutations to early-onset breast cancer (age ≤35 years) and to establish use of family history in identification of mutation carriers.

Materials and Methods: We analyzed 41 women with breast cancer (BC) diagnosed before the age of 36 years and a negative result for the *BRCA1* and *BRCA2* genes (analyzed by direct sequencing and MLPA). Patients were classified according their family history in three groups: A) no family history of cancer (n = 11); B) family history of breast/ovarian cancer (BC/OC) (n = 22); C) family history of other neoplasms (pancreas, kidney, brain, leukemia) without fulfilling the classical Li-Fraumeni criteria (n = 8).

The 11 exons of *TP53*, including the 5'UTR, 3'UTR, and the intron-exon boundaries were PCR amplified and directly sequenced. The analysis of large rearrangements was done by MLPA.

Results: Among the 41 women we identified two (4.8%) deleterious mutations, and both were observed in group C: c.375G>A in exon 4 (splicing mutation) and c.524G>A in exon 5 (p.R175H).

Conclusions: These preliminary results suggest that, after a negative result in the analysis of the *BRCA1* and *BRCA2* genes, *TP53* mutations may play a relevant etiological role in the genetic predisposition of early onset BC, especially in those families with presence of different neoplasms.

523 Poster Breast cancer wait times: the journey from detection to adjuvant treatment

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Background: Wait times for breast cancer patients consist of three components: waits from detection to diagnosis, diagnosis to surgery, and surgery to treatment (systemic and locoregional). There is considerable literature on this third component, especially regarding waits to radiation therapy. We set out to document the first two pre-operative components. Additionally, with the evolution of prognostic and predictive makers and advanced imaging, we anticipated that there would be potential for further delay.

Materials and Methods: The study is a retrospective review of all adjuvant breast cancer patients referred to The Ottawa Hospital Cancer Centre (TOHCC) in 2008. TOHCC is a large regional centre serving a population of approximately 2 million. 949 patients were referred for breast cancer treatment in 2008, 735 of which were included in the analysis. Dates of screening procedures, biopsies, pathology reports, surgeries and treatment initiation were abstracted from the breast database. Time intervals were calculated for all patients where data was available. Wait time intervals were stratified by referring hospital class (academic, non-academic, or peripheral) and use of pre-operative MRI.

Results: The results were as follows, in medians: screen to biopsy, 18 days; biopsy to surgery, 48 days; surgery to marker report, 24 days; surgery to chemotherapy, 55 days; surgery to radiation, 74 days; surgery to hormone therapy, 58 days. Wait time intervals were compared between academic, non-academic, and peripheral referring hospitals, and were significantly different. Approximately 35 percent of patients had a preoperative MRI. Impact of MRI was highly significant in terms of the number of mastectomies performed, and the length of time to surgery. These data will be comprehensively presented.

Conclusions: Pre-operative waits are substantial and should be considered in evaluation of wait times. Both referring hospital, and completion of pre-operative MRI had significant impacts on wait times.

524 Poster A new direction for multidisciplinary care for cancer patients

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Background: Menopausal symptoms are common following treatment for cancer, particularly breast and gynecological cancers. Across all trials of adjuvant endocrine therapy, vasomotor symptoms such as hot flushes are the most common side effect [1]. Up to 20% of breast cancer patients will consider stopping or do actually cease endocrine therapy because of menopausal symptoms [2,3], despite its established role in reducing recurrence. The nature, severity and causes of menopausal symptoms following hormone-dependent cancer are likely to differ from those seen in women with spontaneous menopause and management can be further complicated by the history of estrogen dependent cancer. Long term sequelae of early menopause is an important health issue for young cancer survivors. The management of menopausal symptoms has traditionally been by general practitioners and specialist gynaecologists and consists of supportive care, hormone replacement therapy and symptomatic treatments. Treatment of cancer patients with menopausal symptoms may be more complex as GPs and gynaecologists may be less confident about the potential interaction between cancer, its treatment and menopausal therapies [4]. Oncologists may have limited expertise in managing menopausal symptoms. As a result, there is a greater need for more information on how these symptoms affect women with a prior history of cancer and what long-term health consequences ensue, as well as how best to control them and within what setting.

Materials and Methods: Multidisciplinary management offers many advantages to cancer patients and health care providers. The authors have established a multidisciplinary (MD) research-based public clinic, servicing the entire state of Western Australia and comprised of gynaecologists, breast surgeons, an endocrinologist, oncologists, a psychiatrist, clinical psychologists, a physiotherapist, genetic counsellors, a dietitian and research staff.

Results: This paper presents information about the establishment of this clinical service and describes some of the factors important in developing the Menopausal Symptoms After Cancer (MSAC) service.