Thursday, 25 March 2010 08:30–09:15

EUROPA DONNA TEACHING LECTURE

Impact of lifestyle on breast cancer

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Impact of lifestyle on breast cancer

C. La Vecchia[1]. [1]*Istituto Mario Negri, Department of Epidemiology, Milan, Italy*

Background and Introduction: In Europe, the lifetime probability of developing breast cancer varies from about 5% for a woman with no family history and low lifetime risk profile to over 30% for a woman with young family history and high lifestyle risk profile. Strong familial and genetic factors are restricted to a minority of women, thus an appreciable proportion of breast cancers is in principle preventable through intervention on lifestyle factors.

Materials and Methods: We used available evidence on the relative risk (RR) for major recognized risk factors for breast cancer, and estimates of their prevalence in selected European countries.

Results and Summary: The best established lifestyle factors for breast cancer are overweight and obesity and use of hormone replacement therapy (HRT) in post-menopause, and alcohol consumption both in pre- and post-menopause. The RRs for overweight, obesity and HRT approach 1.5 to 2; about 40% of European women are overweight in post-menopause and 10% long term users of HRT. Thus, control of long-term (combined estrogen and progestin) HRT use, and reduction of overweight and obesity in post-menopausal women could avoid 15 to 20% post-menopausal breast cancers. The RR for moderate alcohol drinking is 1.1 to 1.3, and up to 30 to 40% of women in selected European countries drink alcohol regularly. Thus, reduction of alcohol drinking could avoid 5% of breast cancers in Europe − and in selected countries, like France or Italy, up to 10%. A favorable influence of physical activity and selected aspects of diet on breast cancer risk is also possible, though definition of these factors and their quantification remains uncertain. Still, assuming a RR of 0.8 for regular physical activity and a proportion inactive women of 50%, up to 10% of breast cancers could be avoided by widespread adoption of physical activity. A similar proportion could be avoided by a diet rich in vegetables and poor in animal fats, again assuming a RR of 0.8 for a favourable diet. Lactation has a protective effect on breast cancer, but given the limited number of births per woman in Europe, even long-term lactation would have a modest impact on lifetime breast cancer risk. Likewise, breast cancer risk could be reduced by earlier first birth and increased number of births, but − though in principle modifiable − these factors imply complex societal changes.

The table gives estimates of the avoidable proportion of breast cancers in France for major selected risk factors.

Table. Attributable fraction of breast cancer in France, 2000 [Boffetta et al., 2008]

Risk factor	Attributable fraction
Use of HRT	10.7%
Physical inactivity	10.1%
Alcohol consumption	9.4%
Reproductive factor*	5.4%
Obesity and overweight	4.8%

*Changes in reproductive factors since 1930.

Conclusions: Modification of selected lifestyle factors would have a substantial impact in reducing the breast cancer burden in Europe.

Thursday, 25 March 2010 11:00–12:30

KEYNOTE SYMPOSIUM

Local regional control

206 Invited

Local relapse − same or different disease?

M. Bollet[1]. [1]*Institut Curie, Radiotherapy, Paris, France*

Breast-conserving therapy is the preferred treatment for patients with early-stage breast cancer. It offers equal local control and overall survival and superior psychosocial outcomes compared with modified radical mastectomy. However, an ipsilateral breast cancer recurrence can be traumatizing and can lead to death. When an ipsilateral breast cancer develops, the new tumour can either be a true recurrence − that is, a regrowth of clonogenic cells that were not removed by surgery or killed by radiotherapy − or a new primary tumour that arises from the remaining breast tissue. Several definitions have been used to distinguish true recurrences from new primary tumours. Initially, these distinctions were based on spatial and temporal characteristics of the ipsilateral breast cancer (ie, the farther from and the later after the initial primary tumour, the more likely it is to be a new primary tumour) and on shared common histopathologic criteria (e.g., type, grade, and hormone receptor status). In the quest for additional ways to distinguish new primary breast tumours from true breast cancer recurrences, biologic studies of clonal relationships between the new and original tumour have also been performed. These studies have relied on ploidy, loss of heterozygosity, p53 analysis, or X chromosome inactivation or have been based on DNA copy number alterations (CNAs). Detecting changes in DNA copy number using high-resolution single nucleotide polymorphism arrays has been a useful tool in distinguishing new primary breast tumours from recurrences (Bollet, Servant et coll. JNCI, 100 (2008), 48−58). The potential implications of better defining true recurrences, both clinical − in terms of prognosis and treatment − and scientific, will be discussed at the meeting.

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What surgery constitutes optimal local control

E. Rutgers[1]. [1]*The Netherlands Cancer Institute, Department of Surgery, Amsterdam, The Netherlands*

For many years the role of surgery in breast cancer treatment has been challenged. Some twenty years ago optimism was heralded by medical oncologist and radiation oncologist that the need for surgery in breast cancer could be eliminated by chemotherapy or hormonal therapy followed by radiotherapy. So far, the real world and daily clinical practice is more refractory. For the time being, surgery is the main stay for achieving optimal local control and staging information.

What are the issues at stake in breast cancer surgery?

– Optimal local control.
– Optimal regional control.
– Best cosmetic cosmetic outcome.
– Less invasive procedures.
– Less side-effects and mutilation.
– Better information on prognosis.

What do we need to know to perform optimal breast surgery? For local control we need to have as exactly as possible information on the extent of the disease in the breast, and the intrinsic risk of apparently normal − surrounding − breast tissue to become malignant. Further we need to know the risk of lymphatic involvement for optimal regional control. And, last but not least, we need to know the risk of distant disease to improve survival through adjuvant systemic treatment, which information can be retrieved from the primary tumor.

What are the tools to know what we need to know? First, to know the nature of the lesion, image directed minimal invasive needle biopsies are mandatory: FNA-cytology for fast track diagnosis, and core biopsy for histology and tumor characteristics indispensible in case of suspected DCIS and when up front chemotherapy is considered. Starting treatment of a breast lesion without a diagnosis is obsolete. At a minimum, optimal − digital − mammography and ultrasound of the primary must be performed in all patients to best estimate the extent of the cancer, particularly when breast conservation or neoadjuvant chemotherapy is at stake. The role of contrast enhanced breast dedicated MRI will become more and more important, albeit its precise indication is not yet fully established.

For the diagnosis of lymphatic invasion, PET-CT-scanning and ultrasound followed by ultrasound directed biopsy of suspicious lymph nodes are really of help. If PET-CT-scanning shows lymph node involvement, the chance of a false positive finding is very low and one can proceed to treatment of the axillary lymph node. The same holds true for a tumor positive ultrasound directed fine needle aspiration. If these imaging techniques are negative, the existence of microscopic or small metastasis in lymph nodes is still possible. For that indication today lymphatic mapping by sentinel node biopsy is standard of care.

The surgery: In case of non-palpable cancers, image directed surgery can be employed with the help of intraoperative ultrasound, of a gamma-ray probe after intralesional injection of a radioactive compound (the so called ROLL technique), or probe directed after insertion of I125 seed. In comparative studies, the cumbersome guide wire localization appears to perform less optimal. An important issue is the imaging after neo-adjuvant chemotherapy and the guidance to optimal local and regional treatment. The placement of a marker (for instance an I125 seed) before treatment is indispensible to guide confirmational excisional biopsy after good remissions. MRI plays an eminent role in patients treated with