abduction and in bending the forearm with paraesthesiae and disaesthesiae. Section of the thoracic long nerve is a lesion that happens in 20% of the operated women. It is more frequent in conservative operations as it is complicate to separate. It causes the "scapola alata" with hard movements of the arm over the head especially with extended elbow. Section of inter-costo-brachial nerve causes anaesthesia, paraesthesia, pain of the axillary region, of the 2/3 of posterior-medial area of the arm. These symptoms last for some months and normally improvement is obtained without therapy. Nowadays, preservation of the inter-costo-brachial is performed by the majority of surgeons but there is no consense about the importance of this technique to reduce discomfort of the arm. The lesion of the anterior thoracic nerve leads to an ipotrophia of the pectoralis muscle. This damage can nullify a reconstruction with tissue expander. Lesion of the thoraco-dorsal nerve involves the adduction and the internal rotation of the arm produced by the alteration of the contraction of the latissimus dorsi muscle. Pericondritis and osteitis of the breast bone, acromial bursitis, sclercsis of the major pectoralis muscle and scars are also described.

353 INVITED

Late sequelae of breast cancer treatment, are they preventable? Radiotherapy

J. Jassem. *Medical University of Gdansk, Radiotherapy and Oncology, Gdansk, Poland*

Breast cancer is the most common woman malignancy in Europe. Radiotherapy after mastectomy or breast conserving surgery decreases the risk of locoregional failure and improves overall survival.

Traditionally, postoperative radiotherapy of the breast has been delivered with wide rectangular tangential photon fields. Many patients have also been irradiated with photon beams to the regional nodal areas. These techniques, however, not always provide satisfactory dose homogeneity within the irradiated volume and may imply the risk of late cardiac and pulmonary toxicity. Indeed, in early trials of post mastectomy radiotherapy, reduced risk of death from breast cancer was offset by increased cardiovascular mortality, particularly in patients with left-sided tumors.

Recently, several techniques have been developed to improve the therapeutic ratio. Heart injury following postmastectomy radiotherapy may be decreased by the use of electron rather than photon beam irradiation of the chest wall and parasternal lymph nodes. Important improvement has come from immobilization of the patients using a support cushion and arm handle, or a hard foam cradle. Precision of radiotherapy delivery has been improved by virtue of meticulous portal verification systems. In patients managed with breast conserving surgery better dose conformation to the target volume can be achieved with the use of 3-dimensional (3D) CT planning, and particularly with intensity modulated radiotherapy (IMRT). In these patients, customized 3D compensators allow for better dose distribution than a standard wedge. Probably the most effective protection of critical organs outside of target volume may be achieved by the use of proton irradiation, yet this technique is relatively expensive and not commonly available. Most recently, breathing-adaptation techniques have been shown to reduce cardio-pulmonary radiation doses. These innovative methods turn the radiation beam on only during a pre-specified phase of the respiratory cycle, thus modifying organ movement and position in the field.

In conclusion, modern techniques of postoperative breast irradiation allow better protection of critical organs, without jeopardizing tumor control. However, in some patients some damage of heart or lung cannot be completely avoided. Future studies weighing individual risk of locoregional failure versus benefits of irradiation are therefore warranted.

354 INVITED

Quality of life – the psycho-social aspects

A. Fernandez-Marcos. *Asociación Española Contra el Cáncer, Madrid, Spain*

Overall, studies comparing disease-free breast cancer survivors and healthy women show no major differences in their quality of life. Poorer outcomes in long-term quality of life in breast cancer survivors are clearly related to comorbidity. Fatigue, arm problems and difficulties in sexual functioning are key elements explaining most of the problems found in the different dimensions of quality of life studied.

Although data can be controversial depending on the study reviewed and the variables assessed, common findings from a broad review on long-term quality of life in disease-free breast cancer survivors reveals several factors that may predict the long-term outcomes after completion of treatment. Those factors are: *Age at diagnosis* – women younger than 45 years at diagnosis show worse outcomes in the social dimension while women diagnosed at an older age (>65 years) report more problems in the physical domain; *Disease stage at diagnosis* – patients with advanced disease report worse long-term quality of life; Having received *systemic adjuvant treatment* – side effects of this type of therapy correlate with a negative impact on sexual functioning which persists over time; and, Having undergone *axillary dissection* which is related to an increased risk of arm problems.

Some recent studies on the psychological aspects of long-term quality of life in breast cancer survivors report higher rates of Post-traumatic Stress Disorder and emotional distress in breast cancer survivors compared to controls (healthy women).

As the number of disease-free years has extended for breast cancer patients, more attention should be paid to prevent long-term sequelae. In the decision-making process on the best procedure or treatment regimen for a given patient, long-term sequelae of each treatment and the life stage of the patient at diagnosis should be taken into account as variables that may affect long-term quality of life.

Breast cancer patients should be informed about possible long-term side-effects of treatments, ie) fatigue/lymphoedema, in order to allow them to choose the best possible option and in order to facilitate the adjustment to illness and treatments, not just thinking on the short term, but also, in the years to come.

A careful planning of treatment and follow-ups should include the monitoring of acute and delayed (long-term) side-effects, and the establishment of a community-based early referral protocol for breast cancer survivors, in order to prevent, detect early, and treat long-term sequelae.

More research is needed to find out and prove new treatment procedures that minimise late side effects, ie) lymphoedema, taking into account that breast cancer survival rates are improving and long-term quality of life is becoming a major issue for breast cancer patients.

Friday, 19 March 2004 16:00–17:30

SYMPOSIUM

The use of complementary medicine (CAM) in breast cancer

355 INVITED

CAM: what is it, which breast cancer patients use it and why?

G.A. Bendelow. *University of Sussex, Department of Sociology, Brighton, UK*

This presentation will begin by describing the enormous range and diversity of therapies under the umbrella of CAM (complementary and alternative medicines) which have particular relevance for women with breast cancer. Factors such as the philosophical aims behind different therapies, as well as the practical and therapeutic interventions will be elaborated in order to develop typologies and identify differences, but also similarities between biomedicine and other orientations such as Ayurvedic or Chinese healing systems.

Central to this process is the need to understand the perceived limits of biomedicine, and why women choose to either supplement or even to reject conventional medical interventions. Data from qualitiative empirical research studies will be used to illustrate these choices.

The available statistical evidence of women using these therapies will be examined in the UK, and as far as possible, in the rest of Europe, but problems and limitations of collecting data of this nature will also be highlighted.

356 INVITED

The menopause: does CAM provide an answer?

S. Cecchini. *Centro per lo Studio e la Prevenzione Oncologia, Istituto Scientifico della Regione ToscanaUO di diagnostica medica per Immagini, Firenze, Italy*

A holistic medical approach, which is so important in CAM, means that the subject of the therapy is considered as a whole, not as a puzzle of symptoms or parts. Therefore, talking of menopause and CAM, we have to stress that the gold standard of each evaluation of efficacy of the therapies is not the menopausal syndrome, but the quality of life (QoI), as evaluated by the patient herself. In fact, as regards the menopausal syndrome, we do not have consistent scientific reports of the benefits of CAM; and, besides that, we are not sure of the safety of some of the commonly proposed therapies, such as phytoestrogens.

In the experience of CSPO, we evaluated the QoI of 60 patients who asked an alternative approach. We chose the SF-36 questionnaire, which was administered at the first visit and after two months. The CAM intervention consisted basically in Bach Flowers remedies, and, occasionally, by the teaching of relaxing techniques. Each of the 8 domains of the questionnaire(physical activity, role limitations due to physical and emotional status, physical pain, perception of general health status, vitality,

social activities, mental health, change in health status perception) showed significant improvement ($p<0.05$). The cost of the intervention per woman was meanly 40 euros, but costs could be lowered to 20, if non medical personnel should be employed.

This kind of approach is worth of being considered, because of its low costs, safety, and observed results.

357 INVITED

The validity of research/clinical trials of CAM

E. Winer. *Dana Farber Cancer Center, Boston, USA*

Women with breast cancer use a variety of complimentary and alternative approaches (CAMS), both during active treatment and following the completion of therapy. The percentage of women using CAMs varies from study to study,depending to a large extent on the patient population and the definition of CAM. Women cite a variety of reasons for pursuing CAMs including a desire to improve quality of life, take control over their illness, relieve symptoms, and improve overall survival. Some studies have found that women who use CAMs are more likely to have either physical and/or psychological symptoms compared to non-users.

Unfortunately, there are relatively few studies that have demonstrated unequivocal benefits for many of the commonly used CAMs. Many studies suffer from methodological problems including: inadequate sample size; lack of randomization; failure to blind; and poorly defined interventions and measures of outcome. It is not necessary that all therapies, particularly CAMs, show a survival benefit. However, if any CAM is to be used widely, it should be shown to be safe, particularly if it being used concurrently with other therapy, and that it has some beneficial impact on the user. Recent studies will be highlighted to demonstrate which CAMs have been adequately evaluated to justify common use and which are in need of further investigation.

358 INVITED

Does CAM have a place in breast cancer treatment?

E. Ernst. *Peninsula Medical School, Universities of Exeter&Plymouth, Complementary Medicine, Exeter, UK*

Most breast cancer patients try one form of complementary and alternative medicine (CAM) or another, often out of desperation. In evaluating CAM, one has to consider foremost its proven effectiveness and its potential risks. It is sensible to differentiate between CAM for prevention, treatment and palliation of cancer.

Prevention: Many forms of CAM are promoted for (breast) cancer prevention. The scientific data in support are usually scarce. Some promising (albeit not compelling) evidence exists for the regular use of garlic, green tea, phytoestrogens and panax ginseng. None of these relate specifically to breast cancer.

Treatment: An increasing number of CAM treatments are promoted as cancer 'cures', often supported by quasi-scientific data. Essiac, Di Bella therapy, Hoxley formula, mistletoe, laetrile and shark cartilage are just some examples. For none of these therapies is there sufficiently sound evidence to recommend them to breast cancer patients. Several of these alleged cancer 'cures' are associated with significant risks.

Palliation: Several forms of CAM are not aimed at prevention or treatment but at increasing the quality of life of cancer patients, often through relaxation and reduction of stress, e.g. reflexology, aromatherapy. Other treatments can ease the adverse effects of orthodox cancer therapies, e.g. acupuncture can reduce nausea and vomiting after chemotherapy. Even though the scientific data are often weak, CAM's role in palliative and supportive care is potentially important.

Friday, 19 March 2004 16:00–17:15

PROFFERED PAPERS

Breast conservation

359 ORAL

Gene expression profiling of patients at risk for local recurrence after breast conserving therapy

B. Kreike, H. Halfwerk, P.M.P. Kristel, A. Velds, A.M. Glas, T. Van Der Velde, H. Peterse, G. Hart, H. Bartelink, B. Van De Vijver. *Netherlands Cancer Institute, Radiotherapy, Amsterdam, The Netherlands*

Background: A limited number of risk factors for developing local recurrence after breast conserving therapy have been identified. The most important risk factors appear to be incomplete resection of the tumor and young age. The identification of additional risk factors would be very useful in guiding optimal therapy and also improve understanding of the mechanisms underlying local recurrence. We used cDNA microarray analysis to identify gene expression profiles associated with local recurrence after breast conserving therapy.

Material and Methods: Gene expression profiles were obtained from 60 patients who were under the age of 51 years at diagnosis of a primary invasive breast carcinoma and underwent breast conserving therapy. Of these 60 patients 26 developed a local recurrence and 34 controls were free of local recurrence at 11 years after therapy. From 10 patients with a local recurrence the RNA of the recurrence was isolated and used for analysis. In total 70 samples were analyzed; 60 primary tumors and 10 recurrences. Gene expression profiling was performed using a glass array containing 18,000 cDNAs. Unsupervised and supervised methods of classification were used to separate the patients in groups corresponding to their disease outcome and to analyze the differences between primary tumors and their recurrences.

Results: Hierarchical clustering of patients did not show any grouping reflecting local recurrence status. Supervised analysis revealed a possible classifier consisting of three genes; these data need to be validated. Paired-data analysis showed no set of genes that is consistently different in expression between primary tumors and recurrences. Co-clustering of the primary tumors and their local recurrence in the hierarchical cluster analysis also reflects this.

Conclusions: There are no great differences in gene expression patterns between breast carcinomas with and without a local recurrence after breast conserving therapy. The gene expression pattern in primary tumors and local recurrences is very similar. Preliminary results suggest that there may be a classifier for local recurrence after breast conserving therapy.

360 ORAL

Update of the BASO II trial of primary treatment of tumours of excellent prognosis

R. Blamey[2], U. Chetti[2], D. George[2], D. Morgan[2], M. Mitchell[2]. [1]*Nottingham City Hospital, Breast Institute, UK;* [2]*BASO Breast Group Trialists*

This trial examined additional treatments to Wide Local Excision with clear margins, in Grade I, node negative tumours of 2 cm or less with clear margins. Between 1992 and 2000, 1172 patients were randomised to a 2×2 design. The primary outcome measure is local recurrence (LR), defined as tumour in the treated breast. The median follow-up is 54 months. Survival is excellent, only 7 deaths from breast cancer.

LR by randomisation are:

Randomisation	n	LR	LR%PA
Radiotherapy (RT) to intact breast	584	8	0.3
No RT	574	21	0.8
Tamoxifen	200	2	0.2
No Tamoxifen	208	8	0.9
RT plus Tamoxifen	96	0	Nil
No RT, no Tamoxifen	95	6	1.5

Since for those entering only to the RT or the Tamoxifen comparisons, the other therapy could be given electively by centres, the results by treatment received:

Received	n	LR	LR%PA
Neither therapy	174	15	2.0
RT only	191	6	0.72
Tamoxifen only	411	8	0.44
RT plus Tamoxifen	396	2	0.12

It appears that % LR PA is too high from surgery alone but that Tamoxifen is as effective as RT in lowering LR to very acceptable levels. This would have important cost and waiting time implications for RT in the NHS, if borne out by longer follow up.

361 ORAL

Surgical outcomes for clinically occult breast lesions: comparing radioguided occult lesion localisation (ROLL) vs. wire guided lumpectomy (WGL)

R. Nadeem[1], L. Chagla[1], C. Titterrell[2], R. Audisio[1]. [1]*Whiston Hospital, Prescot, Surgery, UK;* [2]*University of Liverpool, Surgery, UK*

Introduction: Widespread screening has resulted in an increased incidence of clinically occult breast lesions. The surgical management