addition of antineoplaston, cells at the G_1 phase were increased by 15%, compared with the control. Analysis of the expression of cell cycle-related proteins after the addition of antineoplaston showed that the p21 and p16 proteins were increased after administration, however, that the expression of the cyclin D1 and cyclin E proteins was unchanged. At 24 hours after the administration of antineoplaston, the phosphorylation of retinoblastoma (Rb) was inhibited. Furthermore, the analysis of the MAPK expression showed that the phosphorylated ERK MAPK protein began to decrease at 3 hours after antineoplaston administration. To further confirm a role of ERK MAPK in SKBR-3 cell growth, we used PD98059, an inhibitor of mitogen-activated protein kinase kinase (MEK) 1, the kinase responsible for ERK MAPK activation. PD98059 significantly reduced the levels of phosphorylated ERK MAPK, without noticeable changes in total ERK MAPK. Analysis of cell proliferation revealed that PD98059 dose-dependently inhibited cell growth compared to control (vehicle-treated cells), thereby confirming the importance of the ERK MAPK pathway in the control of cell proliferation in SKBR-3 cells. From these results, we have speculated that, in the breast cancer cell line SKBR-3, antineoplaston dephosphorylated ERK MAPK, and that the dephosphorylated ERK MAPK regulated the expression of p21, p16 proteins, inhibited the phosphorylation of Rb, and thereby causing G_1 arrest. The results suggested that antineoplaston may be an effective adjuvant therapy after breast cancer surgery.

192 POSTER

The role of SERMs on the induction of apoptosis of human breast cancer cells in vitro

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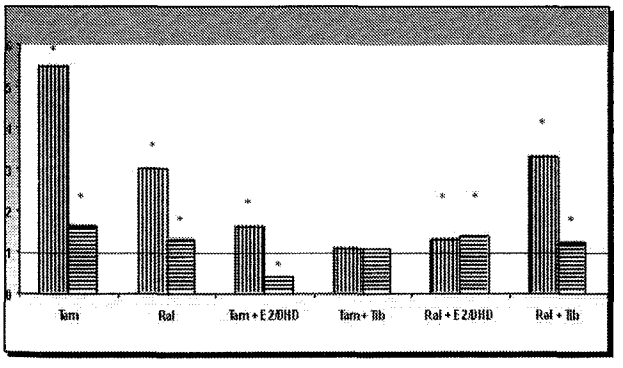
Introduction: In vitro research demonstrated that selective estrogen receptor modulators (SERMs) induce apoptosis (programmed cell death) in human mammary carcinoma cells. However the use of SERMs in vivo can cause severe climacteric complaints sometimes necessitating interrupting treatment. The combined use of tamoxifen and continuous combined HRT did not increase the risk of recurrences in breast cancer survivors (Dew et al., 2002).

Materials and methods: The SERMs tamoxifen (Tam) and raloxifene (Ral) alone or combined with estradiol (E2) plus dihydrodydrogesterone (DHD) as well as tibolone (Tib) were administered to MCF-7 cells, estrogen receptor (ER) positive and MDA-MB-231, ER negative human breast cancer cell lines, in a concentration of 10^{-6} M for 144 hours in vitro.

Proliferation was determined by measuring the expression of Cyclin D1 and apoptosis by using the DNA fragmentation assay and both performed in duplicate. The mean ratios apoptosis versus proliferation were calculated and the 95% confidence intervals assessed.

Results: Tam and Ral alone induced apoptosis in ER positive and negative breast cancer cells (figure 1). Tam and Ral combined with E2 plus DHD did induce apoptosis in ER positive breast cancer cells, however Tam plus Tib neither induced nor stimulated ER positive and negative breast cancer cells. Ral combined with Tib induced apoptosis in both cell lines.



Apoptosis/proliferation versus controls after 144 hours

Ratio>1 means induction of apoptosis. * $P < 0.05$ versus controls.

Conclusion: We demonstrated that our laboratory data mirror cell biological behaviour in vivo and we therefore suggest that ER positive breast cancer survivors using Tam or Ral may simultaneously start with E2 plus DHD or Tib to reduce side effects without compromising its efficacy.

193 POSTER

Antiproliferative activity of tamoxifen on MCF-7 breast cancer cells is modulated by weak electromagnetic field exposure

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Breast Cancer (BC) incidence has been rising ever since the second world war in industrialized countries, a trend paralleled by increasing electrification. Usage of electrical power is intricately associated with electromagnetic field (EMF) exposure. Tamoxifen, a partial estrogen receptor antagonist, is the most frequently used BC medication.

Aim of this study was to substantiate sporadic experimental communication that the anti-proliferative activity of Tamoxifen in MCF-7 BC cells can be modulated by extremely low frequency (ELF) EMF exposure.

Materials and Methods: In order to expose BC cells to reproducibly homogeneous sinusoidal 50 Hz ELF-EMF of defined electromagnetic flux density, we specifically designed tissue culture incubators delivering flux densities of either 0 μT, 1.2 μT, 10 μT or 100 μT at 37°C, 5% CO_2. MCF-7 estrogen receptor positive BC cells were incubated in MEM supplemented with 5% fetal calf serum and treated with increasing Tamoxifen (Tam) concentrations at a given magnetic flux density. After 7 days of culture resulting cell concentrations were measured using a colorimetric test, dose–response curves for Tam were recorded and EC_{50}-concentrations for Tam were calculated at each flux density.

Results: In control experiments without measurable EMF-exposure low Tam-concentrations ($<2\times10^{-7}$ M) expectedly exerted an agonistic proliferative effect on MCF-7 cells. With increasing Tam-concentration the well-known anti-proliferative effect was seen (half maximal effect at 2.2×10^{-6} M). EMF at 1.2 μT flux density shifted Tam dose–response curves to higher concentrations, resulting in a maximal proliferative effect at 1.8×10^{-6} M. In comparison to control experiments at 0 μT flux density, 2 times higher Tam-concentrations were needed to induce a half maximal anti-proliferative effect at 4.4×10^{-6} M when a 1.2μT field was applied. While 0.2μT fields exhibited a similar, if weaker curve shifting effect, higher flux densities at 10 μT or 100 μT exhibited a much less pronounced activity ("window effect").

Conclusion: Clearly, sinusoidal alternating EMF-exposure at environmental flux densities to MCF-7 BC cells modulated anti-proliferative activity of Tam. Clinically, it is interesting to note that 1.2 μT EMF induced near maximal proliferation at a Tam concentration (1 μM) that is usually achieved in serum of patients under Tam-therapy for primary or recurrent BC.

Wednesday, 17 March 2004 16:00–17:15

PROFFERED PAPERS

Psychosocial aspects

194 ORAL

Expectations for breast treatment – complex biopsychosocial determinants

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Expectations regarding the health care experience, treatment process and treatment outcome are key determinants in how the individual will view that health care experience. Within the health literature the study of expectations is often linked to measures of patient satisfaction. There is a need however, for expectations to be considered in relation to specific attributes or aspects of care, rather than being limited to generalisations about the totality of a service which tends to conflate many issues and fails to provide useful information for service improvement (Thompson & Sunol, 1995). In relation to breast care services what is often not considered is that despite an increase in the numbers of patients being diagnosed with breast cancer, many patients referred via a rapid referral system are found to have benign disease. Allied to this, the fast track referral to a breast clinic of a patient who does not have cancer can have adverse intra-personal effects due to a heightening of anxiety (Durning, Morris, Gash & Gray, 1998) and related distress (Nosarti, Roberts, Crayford, McKenzie & David, 2002). Furthermore, such expeditious referral can impact greatly on the expectations held by those individuals presenting with a breast problem.

To date, no research has explored the role of expectations within the breast care pathway. One difficulty within this field of study is that there is a paucity of reliable measures to assess these normative expectations (Thompson & Sunol, 1995) within the health care domain.

Method: A questionnaire was devised to assess expectations of care and treatment. Demographic details, mode of referral and questionnaire data were collected prospectively from 120 patients referred to the James Cook University Hospital (JCUH) breast unit from June 2003 to September 2003.

Results: Utilising Factor Analysis, the questionnaire data produced a three factor structure accounting for 40% of the variance within the sample. The newly devised questionnaire was also able to differentiate between those individuals who held high expectations and individuals who held realistic or lower expectations for likely treatment and outcome. These findings were also related to referral route and place of residence.

Conclusions: Individuals referred to symptomatic breast services hold expectations for prospective treatment and care that incorporate complex, yet integrated biopsychosocial elements. Consideration needs to be given to the 'lay rationality' (Crossley, 2000) behind the construction of these expectations to benefit both service providers and service users.

195 ORAL

Training the woman/patient in communication

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At Amarant, our centre for psychosocial oncology in Utrecht, we developed a program for counsellors on the subject of how to assist patients and their partner/family in different aspects of communication. The goal was the development of effective communication. Four phases of internal and relational communication aspects were worked through in order to learn better communication skills. Supplementary information was also provided concerning the impact of breast cancer and treatment (psycho education). Various intervention methods and techniques were learned, and roll-playing scenarios were used to work through the four phases with the client. The four phases are: 1. Attention to internal processes (how I communicate with myself). Communication problems can often arise because people aren't conscious enough of – or pay too little attention to – their own wishes, feelings, experiences and traumas. 2. Attention to internal attitudes through which I approach other people. Guided meditation, visualization, relaxation exercises, becoming conscious of one's own attitudes (respect, compassion). 3. How I communicate with regard to the consequences of having breast cancer. Processing style, the family system, giving and receiving feedback, projection, differences in position, male–female patterns. 4. Integration into daily life, concluding the training. Together with the client and her partner we use practical experience to test whether the training has led to effective communication. Various approaches, visions and currents in psychotherapy are helpful here: crisis intervention / bereavement therapy / trauma assistance / systems theory / gestalt therapy / psychosynthesis (such as distinguishing between and working with sub-personalities) / transactional analysis (such as the parent–adult–child in each of us model) / communication theory and practice / various relaxation methods, including visualization and energizing exercises. This training teaches counsellors how to methodically work and communicate with a wide variety of techniques and methods. It appears that this methodical approach provides women and their partners with a lot of insight, and gives them the tools to better deal with breast cancer together with their loved ones.

196 ORAL

The My Journey Kit: an advocacy and information tool for newly diagnosed women

L. Swinburne. *Breast Cancer Network Australia, Auburn South, Australia*

One of the biggest challenges women face when diagnosed with breast cancer is sourcing information to make informed decisions about their treatment at the time they need it. It can be hard to know what, or even, when particular resources are most helpful. Women also want to know how to look after themselves and their family during this difficult time.

Breast Cancer Network Australia (BCNA), Australian women who have experienced breast cancer, have developed the *My Journey Kit* to help newly diagnosed women navigate the breast cancer journey. The Kit empowers women by providing important information, signposting key resources and prompting women to ask questions and communicate with their treatment team about their care. BCNA aims to provide the kit to all women within two weeks of their diagnosis.

The *My Journey Kit* includes:

- The *My Journey Information Guide* which provides information and tips gleaned through women's experience as well as suggestions regarding support women have found invaluable. The guide is divided into sections reflecting the breast cancer journey, allowing the woman (or man) diagnosed with breast cancer to look for resources relevant to their particular need at any time.
- The *My Journey Personal Record* where women can record details of their pathology and treatments, side-effects, and important contacts. This Personal Record is their own treatment record and an important advocacy tool which prompts women to ask questions and communicate more effectively with their health professionals.

An evaluation of the pilot project, strategies for promotion and distribution of the Kits and benefits to women and health professionals will be discussed.

197 ORAL

Patient satisfaction with ambulatory breast cancer surgery

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Introduction: In the last decade hospital stay for breast cancer patients has decreased from one or two weeks to one or two days. The degree of support for this development among patients is uncertain. The University Hospital of Maastricht developed a patient centred breast care program, incorporating ambulatory surgery. In this program the patient has postoperatively the final decision to go home. The aim of this prospective cohort study was to measure patient satisfaction in this program.

Material and Methods: Unselected patients of all ages undergoing the whole range of operations for primary breast cancer were included. During their treatment patients were sent three self-administered questionnaires that evaluated their expectations and satisfaction with the treatment program and the support by the Breast Care Nurse (BCN) and the district nurse. Pre- and postoperatively 10 statements on a Likert-scale response format of 1 (totally disagree) to 5 (totally agree) were used. The third questionnaire evaluated the perceived advantages and disadvantages of ambulatory surgery. It provides the possibility to rate treatment satisfaction and satisfaction with the care by the BCN and the district nurse on a 10-point-scale between 1 (extremely dissatisfied) to 10 (extremely satisfied).

Results: Sixty five out of 122 patients were treated in ambulatory setting, 43 stayed 24 hours and 14 were treated in clinical setting. Preoperatively, 66% of the patients treated in ambulatory setting agreed that "discharge from a hospital shortly after an operation was a good idea". The support for this view increased to 77% postoperatively. The view "discharge shortly after an operation causes unnecessary risks" was supported by 53% preoperatively, and by only 4% postoperatively ($p<0.001$). The satisfaction for the overall surgical procedure was rated at 8.3 (sd. 1.1; range 5–10). The support by the BCN and the district nurse were both rated at 9 (sd. 0.9; range 6–10. respectively sd. 1.1; range 6–10). Only one patient who went home the day of operation regretted her decision.

Conclusions: This study shows that, in a group of unselected patients undergoing all types of surgery for primary breast cancer, the ambulatory setting was well received. The support by the BCN and the district nurse was highly appreciated. Without such nursing support ambulatory breast cancer surgery will not achieve this degree of acceptance and satisfaction.

198 ORAL

Influence of breast cancer on physical, emotional and social wellbeing, 10 years after diagnosis – preliminary results

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Background: Many studies have examined quality of life in breast cancer survivors, but little is known about patients who survived for 10 years. Studying long term effects of treatment is important to obtain insight into medical and psychosocial needs of patients and perhaps adjust current therapies in order to minimise late complications.