are diverse and may include side effects, duration of treatment, poor patient education about the benefit of treatment, and forgetting to take drugs. Communicating possible side effects that affect quality of life and offering respective management options will help patients being prepared for these events and curb the influence on daily life. In the context of adjuvant endocrine therapy menopausal symptoms and arthralgia/myalgia may be more relevant to the patient's perception of tolerability than the effect on bone mineral density. Proactive communication can credibly inform that these events have also been reported by a large number of patients in the placebo arm of a clinical trial (MA.17 n = 5170, hot flashes: 54% vs.58% placebo vs. AI, arthralgia: 21% vs. 25%, and although this does not change the symptoms it illustrates that non-adherence with therapy is not an effective strategy either.
Conclusions: Although accommodating patients' preferences, oral therapies are associated with a disturbingly high rate of non-adherence. With the increasing number of oral treatment options and the increasing duration of therapy adherence is vital to effective therapy. Hereby it is essential to communicate how adjuvant therapy works, the impact of non-adherence on the risk of recurrence, and of course the potential side effects of therapy together with management options minimizing the impact on daily life.

Scientific Symposium (Tue, 27 Sep, 09:00−11:00)
Partial Breast Irradiation

364 INVITED

Clinical Radiobiology of Partial Breast Irradiation

C. Petersen[1], E. Dikomey[2], K. Borgmann[2], Y. Goy[1]. [1]*University Hospital Hamburg-Eppendorf, Department of Radiation Oncology, Hamburg,* [2]*University Hospital Hamburg-Eppendorf, Laboratory for Experimental Radiation Oncology, Hamburg, Germany*

During the last decades, the conceptual approach to breast cancer treatment has shifted from radical mastectomy to local treatment that preserves the breast and axillary lymph nodes along with adjuvant systemic therapy. Breast-conserving surgery followed by postoperative whole breast external beam radiotherapy is now the standard of care for suitable patients with early breast cancer. External beam radiotherapy is a safe and effective treatment; the risk of side-effect is low. However, despite its many positive benefits, radiation therapy is also associated with some disadvantages, the foremost of which is perhaps the fact that it is a relatively complex and expensive treatment. Although many studies have failed to identify a subgroup of patients in whom radiotherapy can be completely avoided, whether irradiation of the whole breast is necessary in all or a subgroup of patients remains unclear. An important rationale for considering less than whole-breast treatment concerns the patterns of breast tumour recurrence in patients treated with breast conservation without adjuvant radiation therapy. Data from clinical trials suggest that of the 30% of patients who experience breast tumour recurrence when radiation therapy is not delivered, the vast majority (approximately 80%) will have the recurrence develop at the site of the original disease. In addition, the absolute percentage of recurrences that develop in a location far away from the tumour bed ist low, ranging from 3% to 5%. From these data, many researchers have hypothesized that treatment directed solely to the site of the primary tumour may be adequate. Therefore, partial breast irradiation (PBI) utilizing irradiation of the tumour bed with an associated margin in early breast cancer patients is being investigated. A number of methods of PBI exist: 1) External-beam radiotherapy (EBRT) 2) Intraoperative radiotherapy (IORT) 3) Brachytherapy. Irrespective of modality, the majority of treatments are prescribed using hypofractionated accelerated courses, which are termed accelerated partial breast irradiation (APBI). Determining the dose used and the expected toxicity for each modality requires knowledge of the radiobiologic concepts of both the tumour and the technique used. Understanding the radiobiological principles behind the different APBI techniques enables a more informed prediction of disease control and toxicity and enables quantitative comparisons between techniques and regimens. Patients vary in their response to a specific course of radiation. In the future, translational research may give us the ability to identify genotypic and phenotypic factors, which may enable us to predict which APBI technique may prove more suitable for an indivual patient.

365 INVITED

Partial Breast Irradiation With External Beam Radiotherapy

R. Orecchia[1]. [1]*Istituto Europeo di Oncologia & University of Milan, Department of Radiotherapy, Milan, Italy*

Over the past ten years a increasing number of papers have been published detailing various approaches of Partial Breast Irradiation (PBI), utilizing accelerated fractionated external beam radiation therapy or single dose intraoperative (IORT) or brachytherapy techniques. Very recently both the American and European Societies of Radiotherapy (ASTRO & ESTRO) have developed, independently, some recommendations providing a clinical guidance for the use of PBI outside the context of a clinical trial. With some minor differences, ASTRO and ESTRO guidelines proposed the selection criteria to define a low-risk group of patients, suitable to be treated. Main characteristics are age over 50 years for ESTRO (60 years for ASTRO), unifocal small ductal carcinoma (up to 3 cm and up to 2 cm, respectively) and negative axilla, wide free margins, no additional pathological risk factors such as EIC, LVI, BRCA mutation, and others. Among the different techniques used to perform PBI, external beam radiotherapy has increased rapidly in popularity. 3D-CRT and IMRT can be used safely to partially irradiate the breast. The high conformality of these techniques allows a precise targeting of the lumpectomy cavity and tumour index quadrant, with good dose homogeneity within the target volume. PBI can also be realized using external electron beam in intraoperative setting. IORT allows to realize a high radiation dose to the index quadrant, eliminating the treatment to the tissue remote from the tumour bed, and using only one single session. The comparison between the current standard for early stage breast cancer with early data coming from PBI techniques poses a dilemma as to when preliminary results are sufficiently mature to be allow practitioners and patients to consider a new treatment approach as safe. Since up to now there were few study identifying groups of patients that would benefit from this new approach, the general recommendation is not to consider this technique as the therapeutic standard for all, but to limit the use to proper selected patients. For this reason, further mature data coming from the multi- or unicenter large phase III ongoing trials in US and Europe comparing standard irradiation with the different PBI/IORT schedules and techniques will hopefully support the movement into routine clinical practice (GEC-ESTRO, NSABP B39/RTOG 0413, ELIOT, TargIT, and others). Upadted results of these will be reported and discussed, both with emerging issues of PBI, including new imaging modalities to define the target, biological profiles for selection of cases, and progress in technologies.

366 INVITED

Brachytherapy Options for Partial Breast Irradiation

E. Van Limbergen[1]. [1]*University Hospital Gasthuisberg, Department of Radiotherapy, Leuven, Belgium*

Recent years, Accelerated Partial Breast Irradiation (APBI) has been under investigation as a treatment technique to deliver radiation after breast conserving surgery to a smaller breast volume in a short treatment time. in a subset of carefully selected patients with a small risk for having tumour cells left at a distance from the primary tumour site APBI can be considered as an alternative to whole breast irradiation and boost.
Multicatheter brachytherapy is the oldest technique that has been tested as modality for APBI in a large number of phase II trials with up to 12 year follow and a phase III trial. It has demonstrated an annual local recurrence rate of 0.6% similar to whole breast irradiation but with a better cosmetic outcome. Based on this success other techniques have been developed such as single catheter balloon HDR brachytherapy ,3D conformal external beam radiotherapy or intraoperative irradiation with electron beams (ELIOT) and kilovoltage photon beam (TARGIT). From the early experience these new developments seem to be challenging, but short term follow-up data should be looked at with caution.
The Multicatheter technique with a stepping source afterloader allowing for dwell time optimization is able to deliver a very conformal treatment, limiting the treated volume strictly to the target and allowing for maximal skin sparing. The technique requires skilled and experienced radiation oncologists, with attention for details and precision.
To decrease the existing barrier against the widespread use of multi-catheter BT, the MammoSite™ device, has been promoted as technically less demanding and has become increasingly popular in the US but has been commented more critically by the European experiences. The main problems are the conformance of the balloon to the cavity and to the asymmetrical target as well as the difficulty to avoid skin toxicity when the balloon surface is at less than 15 mm beneath the skin, leading to a high rate of balloon explantation.
Therefor several new BT devices have been developed to combine the advantages of multi-catheter and MammoSite® balloon BT, blending the versatility and flexibility of interstitial BT for dose shaping with the simplicity and convenience of a single-entry device These SAVI® (Strut-Adjusted Volume Implant), the SenoRx Contura®, and the ClearPath® applicators are a marriage of the two techniques and use multiple struts, which can be differentially loaded aiming to maximize tumour bed dose and minimize normal tissue dose According to the limited experience with these hybrid breast BT applicators, skin dose can be reduced significantly without comprising PTV coverage Obviously, these applicators offer an alternative method of APBI for a selected group of patients but their short and long term efficacy has still to be proven.