

World Congress on **Breast Cancer**

August 03-05, 2015 Birmingham, UK

Locoregional radiotherapy in metastatic breast cancer

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Metastatic breast cancer (MBC) at diagnosis has been reported to be in the range of 3-10% of all breast cancer patients. In recent years with the introduction of new chemotherapeutic agents, targeted therapies and hormonal treatment, these patients have been observed to live longer. Several retrospective studies including SEER 1998-2003 database analysis revealed that locoregional treatment improved survival rates in MBC. There are 2 ongoing phase III trials seeking for the efficacy of local therapy, one from India and the other from Turkey. The Indian trial randomized 350 patients who showed an objective response to systemic chemotherapy (CT) to have either mastectomy or breast conserving surgery (BCS) followed by radiotherapy (RT) or no local treatment and the early results with a median follow-up time of 17 months revealed no benefit of local treatment in overall survival rates. The design of the second trial from Turkey differed from Indian trial. In this trial patients were randomized to have either local surgery followed by systemic treatment or systemic therapy at the time of diagnosis. Again the 54 months follow-up data of this trial revealed no significant benefit of local surgery in terms of overall survival rates. However patients with solitary bone metastases showed significant survival advantage when treated with surgery. There are no prospective data regarding the efficacy of locoregional RT (LRRT) in MBC. Several retrospective studies showed beneficial effect of RT in MBC and several of them failed to show this survival advantage. A recent study from Geiger et al. demonstrated that the greatest benefit was observed in patients with MBC who received all treatment modalities including surgery, systemic therapy and LRRT. Hacettepe University protocol in MBC is delivering systemic CT first and in patients with at least good partial response, local surgery either as mastectomy or BCS and axillary dissection followed by LRRT in these patients. All the remaining solitary metastases are then treated with either stereotactic radiosurgery (SRS) or conventional external beam radiotherapy for bone metastasis, Radiofrequency ablation (RFA) or SRS for visceral metastases. A total number of 227 MBC patients between 1999 and 2013 were treated in Hacettepe University and with a median follow up of 35 months, 5 year overall survival (OS) and progression free survival rates (PFS) were 44% and 20% retrospectively. In this period 39 patients did not receive local treatment, 54 were treated with local surgery alone and 132 were treated with both surgery and LRRT. The univariate and multivariate analysis revealed no significant benefit of surgery per se. However LRRT produced better OS and PFS rates. In conclusion the role of LRRT in MBC has not been validated yet. However the results of retrospective analyses including ours led us to believe that LRRT may have an essential role in the treatment of these patients with MBC.

Intraoperative radiotherapy for breast cancer

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Intraoperative radiotherapy (IORT) is referred to the delivery of a single high dose of irradiation directly to the tumor bed during surgery. Variable techniques (application of electrons, soft x-ray application) and different therapeutic approaches (IORT in boost modality, accelerated partial breast irradiation) are under investigation. The different techniques are presented and discussed. The results of the ELIOT trial and the TARGIT trial are discussed as well as the 10-year results of IOERT (intraoperative electron radiotherapy) in boost modality and the ISIOR pooled analysis on 1100 patients treated in boost modality combined with whole breast irradiation. Additionally, data on IOERT in patients after neo-adjuvant chemotherapy and in triple-negative patients are presented. Future aspects of IORT will be addressed finally.