

RADIATION AFTER MASTECTOMY

By: Gil Lederman, M.D.

One of the big questions patients and physicians have is whether radiation is necessary after mastectomy for breast cancer patients. For many years, physicians have known that local recurrence of breast cancer is very common. Recurrence rates - even after mastectomy increase with increasing size of breast cancer and lymph node involvement.

Historically many felt that if a mastectomy was performed the likelihood of recurrence in the chest where the breast once was is slight. So, unfortunately the concept of mastectomy for local control needs modification. It is a daily lesson taught in our department.

However randomized studies have now shown that women with certain sized cancers even after mastectomy have an improved survival rate and improved chance of avoiding local recurrence if radiation is given after surgery.

The same has been shown in women who have lymph node positive breast cancer after mastectomy. Data has been published in major American medical journals including The New England Journal of Medicine.

Multiple studies especially in the last twenty years have improved the prognosis for women with breast cancer.

It is now known that chemotherapy can enhance survival in select women with invasive breast cancer. Up to about a decade ago this was true for lymph node positive women and in more recent years even lymph node negative women having breast cancer of a certain size - usually 1cm - are advised to have systemic treatment to decrease recurrence rate and improve survival rates. Treatment recommendations are altered to update the newest information.

Similar analysis has been performed using radiation to the chest wall.

A study by Buchholz et al from M.D. Anderson Cancer Institute and published in the prestigious Journal of Clinical Oncology examined this issue. Retrospectively they analyzed five clinical studies of neo-adjuvant chemotherapy for breast cancer from 1974 to 1998, including eight hundred and eighty three patients treated with chemotherapy of at least Doxorubicin. Also eighty-seven more were included who were treated with only Taxol.

A multidisciplinary team evaluated the patients.

One hundred and fifty patients underwent mastectomy after chemotherapy and did not receive post-mastectomy radiation. All patients analyzed had undergone mastectomy after neo-adjuvant chemotherapy.

The number of lymph nodes evaluated was fifteen at time of surgery. One hundred and thirty-eight patients or 92% were treated with chemotherapy after surgery. Residual cancer size after neo-adjuvant chemotherapy was 2cm with a range of 0 to 16cm. Neo-adjuvant chemotherapy is that chemotherapy given prior to surgery. Seventy-four patients or 49% had residual cancer less than or equal to 2cm, while 37% had cancers measuring 2.1cm to 5cm and 9% had cancers greater than 5cm despite the chemotherapy at time of surgery. Six other patients had cancers that could not be adequately measured.

The number of cancerous lymph nodes measured at the time of surgery was one with a range of zero to twenty-three. Forty-one percent of the patients had negative lymph nodes, 28% had one to three positive lymph nodes, 20% had four to nine positive lymph nodes and 7% had ten or

more cancerous lymph nodes. Median follow-up was little more than four years. The cancer came back in 47% of the women with distant metastases in 42% and local recurrence in 23% of the patients.

Interestingly, of the thirty-five patients who had local recurrence - local recurrence occurred by itself in 66% of these women and was simultaneous with distant metastases in 14% and was subsequent to distant metastases in 20%.

Overall survival rate at five years was 57% and 40% in ten years.

Something that has been known in the radiation community was that larger size tumors had a higher local recurrence rate and this is confirmed by this study. Also noted was that women with more advanced clinical lymph node stage had higher rates of local recurrence. Local recurrence rate did not correspond with age, estrogen receptor or progesterone receptor. Estrogen and progesterone receptors are proteins on the cancer cell surface and can be measured and tested usually at the time of surgery.

Interestingly noted was the fact that women whose cancer was completely obliterated by chemotherapy did not have a five-year local recurrence rate that was different than women who had cancer left at the time of surgery in the breast.

Five year local recurrence rate for women with clinical and pathologically negative lymph nodes was only 3%. It increased to 14% if the lymph nodes were felt to be clinically negative but were pathologically present and with 63% for clinically positive but pathologically negative lymph nodes. It was 32% for clinically positive and pathologically positive lymph nodes. Thus it seems that lymph node certainly does make a difference in local recurrence rate. International studies have suggested that women with lymph node positive breast cancer, even after mastectomy, should have radiation in an attempt to improve the survival rate. Their data has confirmed that.

The authors found the only group of women with low risk of local recurrence were those with clinical and pathologically negative lymph nodes.

The authors stated, "The data from this study is important because post-mastectomy radiation can reduce local recurrence rate and improve overall survival for women with a high risk for local recurrence. The Danish trials and a randomized prospective trial from Vancouver, British Columbia all demonstrated that the addition of radiation to mastectomy and chemotherapy resulted in approximately 20% proportion reduction in the risk of death. It is clear however that radiation is not needed in every breast cancer case treated with mastectomy and chemotherapy. For example, many women treated initially with surgery for early stage disease have local recurrence rate of less than 10%. Therefore the cost of potential toxicity of adjuvant radiation for these patients clearly outweighs any small potential benefit. However our data suggests that patients with more advanced disease who are down staged after neo-adjuvant chemotherapy still have clinically relevant rates of local recurrence and may ultimately benefit from post-mastectomy radiation."

Furthermore the authors concluded, "We have demonstrated that both the clinical and pathologic extent of disease must be considered when deciding whether to administer post-mastectomy radiation to a patient treated with neo-adjuvant chemotherapy. Patients with locally advanced disease (independent of the pathologic response) in patients with positive lymph nodes may benefit from post-mastectomy radiation." This study is certainly important and adds to the literature suggesting that every woman must speak to her physicians about radiation even after mastectomy. Radiation in selected cases appears to improve survival and diminish local recurrence of the cancer.

It is always best to be seen by expert surgeons, medical oncologists and radiation oncologists at the time of diagnosis. As the expression goes, "The early bird catches the worm." Here the worm

is the best medical care.