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Review Article

Breast Cancer : Overview of Modern Management

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Abstract

Potential benefits of local and or systemic therapy of breast cancer depending on the patient's stage[1]. Local therapy would be expected to be most effective at a time when the patient's disease is confined within the ducts or lobules (premalignant or noninvasive) or is only minimally invasive. Local therapy would be expected to have little if any effect in patients with widespread systemic disease (macrometastatic), except in specific cases of isolated organ sites requiring palliation[2]. Systemic therapy would be expected to have its greatest effect in prolonging survival in patients who are most likely to have distant metastases but whose disease has not had an opportunity to develop substantial resistance (micrometastatic), which might develop with ongoing tumor growth. However, tamoxifen may serve to suppers emergence of new primary cancer, and chest wall and surrounding lymph node radiation may prevent may prevent subsequent micrometastases[3].

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Introduction

It is yet to have universally acceptable treatment protocol of breast cancer, but still there are some reasonably acceptable procedure of treatments which are discussed here.

Through continuing research into new treatment methods, women now have more treatment options and hope for survival than ever before. The treatment option for each woman depend on the size and location of the tumour in her breast, the results of lab tests (including hormone receptor tests) and the stage (or extent) in the disease[4]. To develop a treatment plan to fit each patient's needs, consideration of woman's age and menopausal status, her general health and the size of her breasts are also factors on which treatment plan may need modification[5].

Methods of Treatment

Methods of Treatment for breast cancer are local/Loco regional or systemic. Local Treatments are used to remove, destroy, or control the cancer cells in a specific area. Surgery and radiation therapy is local Treatments. Systemic Treatments are used to destroy or control cancer cells throughout the body. Chemotherapy and hormonal therapy are systemic treatments. A patient may have just one form of Treatment or a combination. Different forms of Treatment may be given at the same time or one after another.

Surgery

Surgery is the most common treatment for breast cancer. Several types of surgery are practiced. An operation to remove the breast (or as much of the

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breast as possible) is mastectomy. Breast reconstruction is often an option at the same time as the mastectomy or later on. An operation to remove the cancer but not the breast is called breast-sparing surgery or breast-conserving surgery. Lumpectomy and segmental mastectomy (also called partial mastectomy) are types of breast-sparing surgery. They usually are followed by radiation therapy to destroy any cancer cells that may remain in the area. In most cases, the surgeon also removes lymph nodes under the arm to help determine whether cancer cells have entered the lymphatic system and gone beyond the breast**.** This procedure in one way predicts the prognosis and on the other hand guide subsequent management.

In lumpectomy, the surgeon removes the breast cancer and some normal tissues around it. Often, some of the lymph nodes under the arm are removed.

In segmental mastectomy, the surgeon removes the cancer and a lager area of normal breast tissue around it. Some of the lymph nodes under the arm may also be removed.

In total (simple) mastectomy, the surgeon removes the whole breast. Some of the lymph nodes under the arm may also be removed.

In modified radical mastectomy. The surgeon removes the whole breast, most of the lymph nodes under the arm and often the lining over the chest muscles. The Pectorals minor is also taken out to help in removing the lymph nodes and for better axillary clearance.

In radical mastectomy (also called Halsted redical mastectomy), the surgeon removes the breast, the chest muscles, all of the lymph nodes under the arm and some additional fat and skin. For many years, this operation was considered the standard one for women with breast cancer, but it is very rarely used now a days this is being more mutilating and the overall prognosis does not differ according to the experience. Breast reconstruction (Surgery to rebuild a breast's shape) is often and option after mastectomy.

Radiation Therapy

Radiation Therapy is the use of high-energy rays to kill cancer cells and stop them from growing. The rays may come from radioactive material outside the body and be directed at the breast by a machine (external radiation). The radiation can also come form radioactive material placed directly in the breast in thin plastic tubes (implant radiation). For external radiation therapy, patients go to the hospital or clinic each day. When this therapy follows breast-sparing surgery, the treatments are given 5 days a week for 5 to 6 weeks. At the end of that time and extra 'boost' of radiation is sometimes given to the place where the tumor was removed. The boost may be either external or internal (using an implant). Patients stay in the hospital for a short time for implant radiation. Radiation therapy, alone or with chemotherapy or hormone therapy, is sometimes used before surgery to down stage the tumors. This approach is most often used in cases in which the breast tumor is large or not easily removed by surgery.

Chemotherapy

Chemotherapy for breast cancer is usually a combination of drugs. The drugs may be given orally of parenterally. Either way, chemotherapy is a systemic therapy because the drugs enter the bloodstream and circulate throughout the body. So, it has got systemic effects. Chemotherapy is given in cycles : a treatment period following by a recovery period, then another treatment and so on. Most patients have chemotherapy in an outpatient part of the hospital, at the doctor's office or at home. Depending on which drugs are given and the woman's general health, however, she may need to stay in the hospital during her treatment. The role of chemotherapy could be Adjuvant or Neoadjuvant.

Hormonal Therapy

It is used to keep cancer cells from getting the hormones they need to grow. This treatment may include the use of drugs that block this mechanism. This hormone manipulation can be done by surgery that is Oophorectomy/ Adrencctomy/ Hypophysectomy or by drugs that is anti Oestrogen, anti Progesterone.

Treatment Choices

Treatment decision are complex. They are often affected by the judgement of the doctor and by the desires of the patient.

A patient's treatment options depend on a number of factors. These factors include her age and menopausal status; her general health; the size, location and stage of the tumor; whether the doctor can feel lymph nodes under her arm and the size of the breast. Certain features of the tumor cells (such as whether they depend on hormones to grow) are also considered. The most important factor is the stage of the disease. The stage is based on the size of the tumor and whether the cancer has spread. The following section contains brief descriptions of the stages of breast cancer and the treatments most often used for each stage.

- **Stage 0** is sometimes called noninvasive carcinoma or carcinoma-in-situ.

  Lobular carcinoma in situ, or LCIS, refers to abnormal cells in the lining of a lobule. These abnormal cells seldom become invasive cancer. However, their presence is a sign that a patient has an increase risk of developing breast cancer. This risk of cancer is increased for both breasts. Some patient with LCIS may given tamoxifen to try to prevent breast cancer, others may not receive any treatment, but to remain in follow-up. Still others may have surgery to remove both breasts as a preventive measure.

  Ductal carcinoma in situ, also called intraductal carcinoma or DCIS, refers to cancer cells in an area of abnormal tissue in the lining of duct that have not invaded the surrounding breast tissues. If DCIS lesions are left untreated, over time cancer cells may break through the duct and spread to nearby tissues becoming and invasive breast cancer. Patients with DCIS may have a mastectomy or may have breast-sparing surgery followed by radiation therapy. Underarm lymph nodes are not usually removed.

- **Stage I and stage II** are early stage of breast cancer, but the cancer has invaded nearby tissues, Stage I means that cancer cells have not spread beyond the breast and the tumor is no more than about an inch across. Stage II means one of the followings; the tumour in the breast is less than I inch across and the cancer has spread to the lymph nodes under the arm; the tumour is between I and 2 inches, with or without spread to the lymph nodes under the arm; or the tumour is larger than 2 inches but has not spread to the lymph nodes under the arm. Patients with early stage breast cancer may have breast-sparing surgery followed by radiation therapy as their primary local treatment or they may have a mastectomy, with or without breast reconstruction (plastic surgery) to rebuild the breast. Sometimes radiation therapy is also given to the chest wall after mastectomy. These approaches are equally effective in treating early stage breast cancer. The choice of breast-sparing surgery or mastectomy depends mostly on the size and location of the tumour, the size of the patient's breast, certain features of the cancer, and how the woman feels about preserving her breast. With either approach, lymph nodes under the arm usually are removed.

  Many parents with stage I and most with stage II breast cancer have chemotherapy and/or hormonal therapy in addition to surgery or surgery and radiation therapy. This added treatment is called adjuvant therapy. It is given to try to destroy any remaining cancer cells and prevent the cancer from recurring or coming back. The recent approach for treating stage II breast cancer patients is neo-adjuvant chemotherapy. Here two/three cycles of chemotherapy is given before surgery.

- **Stage III** is also called locally advanced cancer. The tumour in the breast is large (more than 2 inches across), the cancer is extensive in the underarm lymph nodes, or it has spread to other lymph nodes or tissues near the breast.

Patients with stage III breast cancer usually avail of both local treatment to remove or destroy the cancer in the breast and systemic treatment to stop the disease from spreading. The local treatment may be surgery and radiation therapy to the breast

and underarm. The systemic treatment may be chemotherapy, hormonal therapy, or both; it may be given before or after the local treatment. Neo-adjuvant treatment with Docetaxel (Taxotere) alone[2], Adriamycin + Taxotere (AT)[3], Adriamycin + 5-Flurouracil + Cyclophosphamide (FAC) and Cyclophosphamide + 5-Flurouracil + Methotrexate (CMF) may be started before starting local treatment. Now a days, standard protocol for treating stage III breast cancer patients is:

To Start with chemotherapy, continue for 3 cycles, followed by

Surgery, then

3 more cycles of chemotherapy, followed by

Radiotherapy.

- **Stage IV** is metastatic cancer. The cancer has spread from the breast to other parts of the body, whatever type of treatment we prescribe for this type-it is nothing but palliation.

  Patients who have stage IV breast cancer receive chemotherapy and hormonal to destroy cancer cells and control the disease. The new approved choice in this stage is either Docetaxel and Adriamycin in combination or as single agent. They may have surgery or radiation therapy to control the cancer in the breast. Radiation therapy to control tumours in other parts of the body. Basically symptomatic medication and subsequently terminal care is the only help to these patients.

- **Recurrent Cancer** means the disease recurs in spite of the initial treatment. Even when a tumour in the breast seems to have been completely removed or destroyed, the disease sometimes returns because undetected cancer cells remained in the area after treatment or because the disease had already spread before treatment. Most recurrences appear within the first 2 or 3 years after treatment, but breast cancer can recur many years later.

  Cancer that returns only in the area of the surgery is called a local recurrence. In this situation, management depends on the individual status of the disease. Local recurrence are mostly dealt with local or loco regional radiotherapy accordingly and very rarely revisional surgery. Local recurrence usually can be attributed as treatment failure. This is more common in breast conservative procedures.

  It the disease returns in another part of the body, it is called metastatic breast cancer. Disseminated lesion mostly dealt by Chemo/Hormonal and isolated bone metastasis may be dealt by radiotherapy also.

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