

Histopathology and various management and treatment techniques involved in breast cancer.

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Abstract

Breast cancer is the most frequent cancer in women, accounting for nearly one out of every ten new cancer diagnoses each year. It is the world's second most common cause of cancer death among women. Milk-producing glands are located in front of the chest wall in the breast. They are supported by ligaments that join the breast to the chest wall and lie on the pectoralis major muscle. The breast is made up of 15 to 20 lobes organised in a circular pattern. The breast size and shape are determined by the fat that covers the lobes. Each lobe is made up of lobules that contain the glands that produce milk in response to hormone stimulation.

Keywords: Histopathology, Breast cancer, DCIS, Surgical oncology.

Introduction

According to its relationship to the basement membrane, breast cancer can be invasive or non-invasive. Breast non-invasive neoplasms are categorised into two types: Lobular Carcinoma *In situ* (LCIS) and ductal carcinoma *in situ* (DCIS) (DCIS). LCIS is thought to be a risk factor for breast cancer development. The conformance to the outline of the normal lobule, with enlarged and filled acini, distinguishes LCIS. Pathologists distinguish four forms of DCIS: papillary, cribriform, solid, and comedo. DCIS is more morphologically variable than LCIS [1].

DCIS is characterised by distinct gaps filled with cancerous cells, frequently surrounded by a discernible basal cell layer of presumably normal myoepithelial cells. DCIS of the papillary and cribriform forms are often lower-grade lesions that take longer to progress to invasive malignancy. DCIS that is solid or comedo in appearance is usually a higher-grade lesion. If left untreated, DCIS frequently progresses to invasive malignancy. The lack of overall architecture, haphazard infiltration of cells into a variable quantity of stroma, or creation of sheets of continuous and monotonous cells without regard for the form and function of a glandular organ are all signs of invasive breast cancer. Invasive breast cancer is divided into ductal and lobular histologic types by pathologists.

The two main goals of treatment are to lower the chances of local recurrence and metastatic metastasis. Local cancer management is achieved through surgery with or without radiotherapy. Systemic therapy, such as hormone therapy, chemotherapy, targeted therapy, or any combination of these, is recommended when there is a risk of metastatic relapse. Systemic therapy is used as a palliative therapy in patients

with locally advanced disease, with surgery playing a minor or non-existent role [2].

In the treatment of breast cancer, surgery plays a crucial role. It is the most fundamental method for disease control on a local level. Due of the high risk of morbidity without a survival advantage, the Halsted radical mastectomy, which removes the breast with axillary lymph node dissection and excision of both pectoralis muscles, is no longer indicated. Patey's modified radical mastectomy is becoming more well-known. It requires the removal of the whole breast tissue, as well as a significant portion of the skin and axillary lymph nodes. The major and minor pectoralis muscles are preserved. Simple mastectomy refers to breast-only excision without axillary dissection. Small tumours with negative sentinel lymph nodes can be treated with this method.

Breast-Conserving Surgery (BCS) aims to remove the tumour as well as a rim of normal breast tissue of at least 1 cm (wide local excision). A quadrantectomy entails removing the entire breast segment containing the tumour. In most cases, the following two treatments are combined with axillary clearing through a separate incision. Sentinel lymph node biopsy, sampling, and partial (II) or total (III) axillary lymph node dissection are examples of axillary procedures. The removal of a benign tumour without removing normal breast tissue is known as a lumpectomy [3].

Local disease control relies heavily on radiation therapy. When radiation therapy is used after BCS, the chance of cancer recurrence is cut in half after 10 years, and the risk of breast cancer death is cut in half after 15 years. Radiation, on the other hand, is not recommended for women over 70 who have small, lymph node-negative, hormone receptor-

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positive (HR+) tumours since it has not been found to increase survival in patients who have been on hormonal therapy for at least 5 years. Large tumours (more than 5 cm) or tumours that enter the skin or chest wall, as well as positive lymph nodes, benefit from radiation therapy [4]. Systemic therapies for breast cancer include chemotherapy, hormone therapy, and targeted therapy. Over a 10- to 15-year period, a first-generation chemotherapy regimen such as cyclophosphamide, methotrexate, and 5-fluorouracil (CMF) in a 6-month cycle reduced the chance of relapse by 25%. Modern breast cancer treatments include anthracyclines (doxorubicin or epirubicin) and newer medicines like taxanes. Adjuvant and neoadjuvant chemotherapy are administered during a three to six-month period. Tamoxifen treatment for at least 5 years after surgery for early-stage HR+ breast cancer has been proven to cut the recurrence rate in half over the first 10 years and lower breast cancer mortality by roughly 30% over the first 15 years.

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10 years and lower breast cancer mortality by roughly 30% over the first 15 years [5]. Early breast cancer has a favourable prognosis. Both stage 0 and stage I have a 5-year survival rate of 100%. Stage II and stage III breast cancer have 5-year survival rates of roughly 93% and 72%, respectively. When a disease spreads throughout the body, the prognosis becomes worse. Only 22% of stage IV breast cancer patients will live for another five years.

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