

Breast Cancer Management in Remote Communities. 30 Years on

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This paper shares the 40 years experience of a consultant general surgeon working in the Caribbean.

More efficient use of resources and a more aggressive approach to detection and prevention is required, to reverse what appears to be a worsening epidemic of breast cancer disease.

World wide, 10% of all women are expected to develop breast cancer.

In Barbados for the period 1991 to 1995, the incidence was 1 per 1000 women per year, and the mortality, 1 per 2500 women per year. The under 45 age group accounted for 24% of patients and 21% of deaths. The 45 to 65 age group for 35% of patients and 36% of deaths, and the over 65 age group for 41% of patients and 43% of deaths.

A reduction of the mean age at which diagnosis is made reflects either earlier detection of cases or earlier penetrance of the carcinoma gene, and an increase in the difference between mean age for diagnosis and the mean age of death, reflects improving survival rates.

The complications of breast surgery are related to surgical technique.

Poorly designed flaps which are too thin or thick compromise healing, cosmetic appearance, and local recurrence rates

In summary, breast cancer continues to be a major health concern which requires new innovative approaches to reduce the mortality, morbidity and the economic cost of patients.

Keywords: Breast Cancer; Screening; Lymph Node

Introduction

Despite extensive educational and screening programs, a large proportion of patients with breast cancer (30%), present with advanced disease in which there is lymph node involvement. More efficient use of resources and a more aggressive approach to detection and prevention is required, to reverse what appears to be a worsening epidemic.

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Pathogenesis

The breast is a modified sweat gland, on the chest wall between the 3rd and 6th ribs and the lateral border of the sternum and the anterior axillary line. Its main component is glandular tissue with

ducts and fat cells, subdivided by fibrous septa, within an investing fascia. The ducts are channeled together to meet at the apex of a mound and pass through the areola area and nipple, where secretions are discharged onto the skin's surface. The lymphatics throughout the breast have no valves and drain via the fascial planes to the axillary and internal mammary lymph nodes.

At puberty, increasing levels of oestrogen hormones induce budding and acinar formation. Cyclical changes take place with the menstrual cycle, the ducts shrinking and proliferating in turn. The placental hormones of pregnancy produce alveolar hyperplasia and a change in prolactin levels at parturition initiates lactation.

Prior to pregnancy, the predominant oestrogenic hormones are oestrone and oestradiol, which have a greater potential for carcinogenesis than oestriol, which is the predominant hormone after pregnancy. Hormonal influences are the major factors in the pathogenesis of breast cancer, but genetic predisposition, and exposure to other known carcinogens, such as smoking and irradiation, may also have impact.

There is as yet no means of achieving, safe, life time suppression of oestrogen receptors in patients who are at high risk from genetic predisposition.

Carcinoma of breast begins as single cells that replicate to become accumulations of abnormal tissue. These accumulations are first detectable by mammography, as they contain microcalcification, and by ultrasound scan through physical changes. Manual palpation depends on how close the lesion is to the skin surface and on the size of the breast, but in general, most lesions become palpable when they reach about 1 centimetre in diameter.

Spread of cancer cells along the lymphatics to lymph nodes may occur at any stage. Axillary node sampling allows staging of the disease. There is correlation between tumour size, tumour type and lymph node involvement.

Progress to Stage 3 and Stage 4 disease with metastatic spread to liver, lungs and bones occur if no therapeutic interventions take place and death occurs about 3 or 4 years after the diagnosis has been made.

Therapeutic interventions aim to cure patients and prolong life. To do this with minimal physical or psychological mutilation, and to prevent local recurrence and spread of the disease, where cure

has not been achieved. The prevention or early detection of disease in the other breast and the breast of close relatives is an important objective.

Strategies for cure include: Early detection and surgery, adjuvant radiotherapy, chemotherapy and hormone therapy, depending on the diagnosis, the condition of the patient and the access to types of treatment.

Early diagnosis depends on public knowledge of the modes of presentation. 66% present with a painless lump, 11% with painful breasts, 9% with nipple discharge and 5% with nipple retraction. Local oedema in 4% and enlarged axillary lymph nodes in 4%, were other modes of presentation.

A growing proportion of patients are now being diagnosed by screening mammography of persons with no symptoms. Notwithstanding the benefits of screening programs which detect lesions before they are palpable, there is as yet no real evidence that mammography produces better outcomes, than a well organized public health education program that supervises in the community, self examinations, examinations by friends and physical examinations by health professionals, and programs that identify those at risk by virtue of family history, nulliparity, age of over 30 for first pregnancy, and absence of breast feeding.

Diagnostic features of relevant investigations of Breast disease. Match the following

- Ultra sound scan A Micro calcifications
- Wire guided biopsy B Multifocal DCIS
- Bone Scan C Cysts suitable for aspiration
- Manual examination D C3 cytology
- Fine Needle Aspiration E Paget's disease
- Chest Xray F Stage 2 disease
- Sentinel Node Biopsy G Breast mouse- fibroadenoma
- Core biopsy H Stage 4 disease
- Areolar skin biopsy I Lung Metastases
- Mammography J ER positive.

Management of breast disease

The management of breast disease is a changing process, influenced by new technology, as well as economic and epidemiological factors. Economic factors have become significant because the cost

of treating breast cancer, continues to spiral upwards, making it necessary for a reduction in the burden imposed by benign breast disease. More cases need to be diverted away from the care of specialist breast units.

Large family practices may find it worthwhile to invest in ultrasound scan equipment and staff training to allow accurate diagnosis of benign cysts, and the offer of therapeutic aspiration of benign cysts.

Other benign conditions such as cyclical hormonal mastalgia and fibroadenosis may similarly have confirmatory laboratory investigations and general practice protocols of therapeutic trials with evening primrose oil, non steroidal analgesics or diuretics.

Referrals to hospital units continue for residual masses that persist after aspiration of a cyst, breast abscesses, duct papilloma that may require microductectomy. Rarely large fibroadenomata may be phylloides sarcoma.

30% of patients present with Breast Cancer below the age of 50, indicating that this subgroup must be identified in other ways. Opportunities exist in well women clinics that screen for cervical cancer and in maternal and child health programs that bring women into contact with health professionals. Similarly, older women attending clinics for monitor and treatment of chronic diseases should be offered regular breast examinations.

Symptoms based public education programs, family history and genetic screening will identify those who should be offered mammographic screening at earlier age, and also give guidance on those who should avoid the use of oral contraceptives, hormone replacement therapy and cigarettes.

Mammography allows earlier detection of carcinoma and should have increased the proportion of patients presenting with stage 1 disease. The ideal frequency for regular mammographic screening varies, depending on the patients category for high, medium and low risk of developing breast cancer.

Changes of structural features of the breast are usually preceded by microcalcification. The peri-ductal micro calcification must not be confused with the benign peri acinar calcification that progresses to popcorn macro calcification. Both can coexist.

Fine needle aspiration and cytology does not provide confirmatory histology in a large proportion of cases, and has given way to

ultrasound or x-ray guided open excision biopsy, which at the same time allows hormone receptor status (oestrogen, ER progesterone and Herceptin HER) and is associated with a lower proportion of patients with axillary node metastases at the time of further elective surgical procedures.

The histological classification and enzyme receptor status provide the basis for management decisions and protocols by multidisciplinary teams.

Mastectomy is considered to be unnecessary mutilation in patients with Stages 2, 3 and 4 oestrogen receptor positive breast cancer, as survival of the patient and extension of local disease is no better than with wide excision, axillary sentinel node sampling, radiotherapy, chemotherapy and hormonal therapy (tamoxifen and the aromatase inhibitors etc).

Fast tract clinics which offer ultra sound, mammography and FNA cytology, allow patients with carcinoma, as indicated by a C5 cytology result, to be processed in a single out patient session and then to be referred immediately for curative wide local excision and dissection of axillary nodes.

The aim of treatment is to ablate and control local disease, prevent dissemination and to minimize physical and emotional morbidity.

Where the result is negative, C1-4 or the location of the tumour indicate that a mastectomy is required, clinical or guided core biopsy is mandatory.

Ultra sound guided core biopsy of lesions and Polymerase Chain Reaction-RNA confirmation of cancer cells within sentinel nodes, has become a reliable outpatient procedure, permitting fast tract outpatient diagnostic clinics to expand to include definitive therapy by intra operative brachio-radio therapy, or percutaneous ablation of the tumorous area with lasers or cryoprobes.

Such advances would significantly reduce the duration of primary treatment of patients with breast cancer, from the current 8 to 12 weeks average to a period of 3 or 4 days.

This would be preferred to the present trend for mastectomy combined with reconstructive surgery utilizing TRAM or LADR.

Notwithstanding this, the gold standard treatment for patients in developing countries, who do not have ready access to adjuvant

chemotherapy and radiotherapy, remains the simple mastectomy with clearance of axillary nodes.

Stage I disease is cured by this procedure and a significant proportion of those with Stage 2 disease have very good survival rates. A rate that is further enhanced by tamoxifen hormone therapy and radiotherapy.

The complications of breast surgery are related to surgical technique.

Poorly designed flaps which are too thin or thick compromise healing, cosmetic appearance, and local recurrence rates. Inadequate haemostasis, cut lymphatics, or unsatisfactory drainage, may lead to haematoma formation, delay healing and delay of start of radiotherapy.

Extensive involvement of axillary nodes by tumour threatens the long thoracic nerve and cutaneous nerves in the axilla. Sacrifice of these may be necessary to achieve palliation of advanced ER negative disease.

In summary, breast cancer continues to be a major health concern which requires new innovative approaches to reduce the mortality, morbidity and the economic cost of patients.

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