

Original Research Paper

Staging, treatment and current investigations for breast cancer - a GP perspective

Karen M Flegg MB BS (Hons), FRNZCGP, FASBP, Gr Dip Clin Epi (GP)
Ms Yvonne J Rowling BA, Dip Ed, Gr Dip Clin Epi (GP)

ABSTRACT

Breast cancer is the commonest cancerous cause of mortality in New Zealand women. Most tests used in screening and diagnosis for breast cancer are well known, but how useful are these tests?

New Zealand has recently commenced a national breast screening programme. It is therefore timely and important that GPs have a basic knowledge of the difference between screening and diagnostic procedures and the range of options available for diagnostic purposes.

The authors have identified and examined a large amount of literature relating to this subject through extensive hand searching, by Medline search and subsequent examination of relevant articles. Investigations are considered in a clinical context which relates to general practice. The components of the triple test are discussed and their sensitivity, specificity, positive and negative predictive values given. The TNM staging tool for breast cancer and the current treatment practices are outlined.

Key points

- It is important to differentiate between asymptomatic women who can appropriately attend screening programmes and symptomatic women who require diagnostic workup
- Urban GPs are likely to see a patient with a new breast cancer once every two to three years
- The triple test for investigation of breast symptoms is defined as clinical examination, mammography and fine needle biopsy

Incidence and mortality of breast cancer

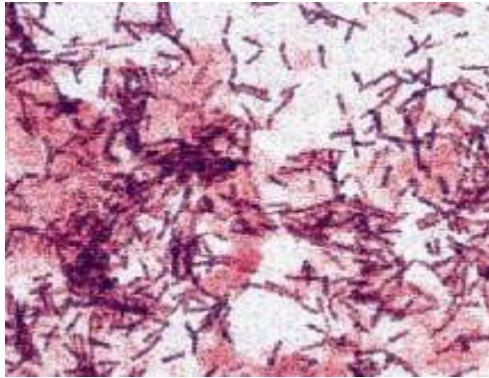
New Zealand women have a lifetime cumulative risk of developing breast cancer of 8.3 per cent,¹ which equates to one in 12 women developing breast cancer.² Breast cancer is the commonest cancer in females and between 1985 and 1994 there has been an increase in the rate of registration of breast cancer in New Zealand of 32 per

cent.³

Women have 100 times the incidence of breast cancer compared with males. The disease is more common in older women. Australian figures show that mortality from breast cancer from 1921 to 1994 was consistently higher in older women than younger women and has been relatively stable in time over all age groups.

Currently there are no national data on survival rates from breast cancer in women in New Zealand or Australia. South Australia and NSW⁴ provide the most reliable data from Australia and show that 76-77 per cent of women survive five years after diagnosis and this survival is much greater for women initially diagnosed with cancer localised to the breast, without regional or distant spread. Data also show that women aged 75 years and older at diagnosis have a poorer survival rate than younger women and that screening mammography can reduce mortality through earlier detection and treatment.⁵

Urban GPs with mixed practices are likely to see a patient with a new breast cancer once every two to three years.⁶ Some women GPs with more specialised practices could expect to see the condition more frequently. Many GPs are, however, caring for women who have previously had breast cancer. GPs are also commonly consulted by women with benign breast disease or screening detected abnormalities, where the judicious use of investigations is needed to exclude breast cancer.



Treatment

Breast cancer is staged according to a clinical classification system⁷ (Table 1) and treatments are determined according to this system. Treatments for breast cancer are not a recent development. Surgery has been used to treat breast cancer for over a

century⁸ and adjuvant therapy for advanced breast cancer, in the form of ovarian ablation, was first described in 1889.⁹

Treatments have, however, changed with current evidence. Forty years ago the standard treatment for early breast cancer in western countries was radical mastectomy and wide axillary dissection. Adjuvant therapies available included ovarian ablation and radiotherapy. Trials in the 1960s showed simple mastectomy combined with axillary dissection (or axillary radiotherapy) achieved similar survival rates to radical mastectomy.¹⁰ Evidence is considered to be Level II⁷ that there is no survival advantage of radical mastectomy over either modified and simple mastectomy or breast conserving therapy with radiotherapy.

Radical mastectomy was replaced by simple mastectomy which, in turn, was replaced by breast conserving treatment for some patients. This involves complete local excision (CLE), axillary dissection, plus adjuvant radiotherapy, the latter to prevent local recurrences. Types of adjuvant therapy to adjust hormone levels used over the last 40 years have been surgical and radiotherapeutic ovarian ablation, adrenalectomy, hypophysectomy, tamoxifen, high dose medroxyprogesterone acetate. Ovarian ablation has essentially been replaced by chemotherapy in the premenopausal woman and by tamoxifen and newer pharmacological agents in the postmenopausal woman, except in advanced disease where all modalities may be used.⁷ Current treatment recommendations are outlined in Table 2.

Investigations

A range of diagnostic modalities are used to determine the presence or absence of breast cancer. It is important to distinguish between investigations used for *diagnostic* purposes in symptomatic women and investigations used to *screen* asymptomatic women. The usefulness and use of all investigative modalities varies with these two purposes.

For *asymptomatic women* GPs may use CBE and mammography as screening tests to try to find evidence of carcinoma, with no particular area upon which to focus.

Symptomatic women have a problem requiring diagnosis. The GP is often the first person consulted and their role is to perform clinical breast examination (CBE) as an initial assessment and arrange other tests as appropriate. If on CBE, the GP finds that the patient has a lump, then it is important to proceed through the full range of diagnostic tests available until cancer is excluded. This may involve mammo-graphy, real time ultrasound and fine needle biopsy. Such diagnostic investigation focuses on the clinical lesion and attempts to prove that the clinical abnormality is a carcinoma. Failure to find any suspicious features provides reassurance.¹¹

The triple test

The triple test for investigation of breast symptoms is defined as clinical examination, mammography and fine needle biopsy.¹² Note that ultrasound does not form part of the triple test. The test is positive if any one component shows a suspicious or malignant result.¹³ The accuracy of its three components is outlined in Table 3. A triple test positive is found in 99.6 per cent of breast cancers, with the likelihood of cancer increasing with more than one component positive.¹² A triple test negative on all components provides good evidence of a less than 1 per cent chance of cancer.^{12,14}

Physical examination

Physical examination is used as a screening test by patient or doctor, or as a diagnostic test by the doctor. This is the commonest tool used by both patients and doctors, to determine if any individual woman is symptomatic or asymptomatic, and hence whether further means of investigation should be utilised.

Ideally, patients are told by their GP to perform monthly breast self-examination (BSE), which is generally easiest following their menstrual period. The New Zealand Cancer Society promotes "breast awareness" for all women, especially those over age 40, which encourages women to look and feel for breast changes.¹⁵ GPs perform clinical breast examination (CBE) as part of a routine check of female patients. CBE is less sensitive than mammography in screening asymptomatic women, and the evidence for it reducing mortality beyond the benefit of mammography is unclear.¹⁶

This test is extremely useful to GPs.¹⁷ No equipment is required save a pair of hands and eyes. Knowledge is commonplace as to technique and, if not known, is readily available. The test can be used to confirm that an asymptomatic woman has no suspicious signs and hence can go for mammographic screening rather than attend a centre for diagnostic investigations. If there are any clinical signs then the patient presents a diagnostic problem and should be appropriately referred for the full range of diagnostic tests.

CBE can also be used to gain further information from patients who believe they have an abnormality on their own examination. This application of CBE is diagnostic, performed to confirm or exclude a lump.

TABLE 2: CURRENT BREAST CANCER MANAGEMENT PRACTICE [*]	
PREMENOPAUSAL WOMEN*	
All patients	Mastectomy or breast conserving treatment (CLE, radiotherapy) ‡ PLUS axillary dissection §
Node positive patients regardless of tumour size	Combination chemotherapy OR ovarian ablation (in practice, this option is rarely used)
Node negative patients	Combination chemotherapy OR ovarian ablation (only if there are poor prognostic features #)
POSTMENOPAUSAL WOMEN	
All patients	Mastectomy or breast conserving treatment (CLE, radiotherapy) PLUS axillary dissection
Node positive, Oestrogen receptor positive	Tamoxifen for two to five years PLUS chemotherapy if under 65 years or with poor prognostic features
Node positive, Oestrogen receptor negative	Combination chemotherapy
Node negative, Oestrogen receptor positive	Tamoxifen for two to five years
Node negative, Oestrogen receptor negative	Tamoxifen is of uncertain benefit. Chemotherapy should be considered in younger patients and those with poor prognostic features
Notes relating to Table 2 [*] Premenopausal is, by tradition, taken as meaning under 50 years of age [‡] Breast conserving therapy currently includes lumpectomy, segmentectomy or quadrantectomy	

Diagnostic

used in combination with radiotherapy (to prevent local recurrence) and axillary dissection
 § Axillary dissection is common to all treatment modalities
 # Poor prognostic features are: tumours >20mm; tumours 11mm-20mm which are oestrogen
 progesterone receptor negative or are of high grade or have vessel space invasion

mammography

The standard is two-view mammography, a cranio-caudal view and a medio-lateral view of each breast. This is applied to both asymptomatic (screening) and symptomatic (diagnostic) investigation. In a diagnostic workup, more specialised views can be performed on localised areas of clinical or mammographic suspicion, eg, magnified and compression views.

Mammography is not the test of first choice in women under 30 with a clinical lesion.¹⁶ However, it can provide valuable additional information on the rare occasions when other tests raise the suspicion of carcinoma. While mammograms are x-rays, they are considered to be extremely "low risk", having been anecdotally compared in risk to a number of insignificant events such as travelling 10 miles in a car, being a man aged 60 for 20 minutes or smoking one-tenth of a cigarette.

GPs must refer patients to specialist radiology practices for mammography, where appropriate equipment and highly trained staff can ensure a technically sound test. The woman will then return to the GP with mammogram performed and read.

Ultrasound

Ultrasound is not part of the triple test for diagnostic investigation. It has a lower false positive rate than mammography and is more sensitive in younger women than mammography. It is therefore used as the first investigation modality in symptomatic women under 35 years.^{13,16} It is also used to provide further information and sometimes imaging control for fine needle biopsy in women with clinical or mammographic lesions. It is generally not used for screening purposes and is of most use when there is a localised abnormality.



Few GPs possess the skills and necessary equipment to perform this test, although the equipment is considerably cheaper than corresponding mammographic equipment. The test is considered to be free of harmful effects.

Fine needle aspiration biopsy (FNAB)

Fine needle biopsy is a diagnostic investigation performed with manual, ultrasonic or radiological (stereotactic) guidance on a

clinical or mammographic lesion. It is the most accurate part of the triple test. The test is highly sensitive for breast cancer when performed by an experienced operator.^{18,19} It may confirm diagnosis before open biopsy and hence allow better planning of definitive surgery.

Three per cent of cancers will be missed without FNAB as part of the diagnostic testing of clinical masses.¹² The value of FNAB is reduced in the hands of inexperienced operators.^{18,19} Therefore, and in order to achieve maximum cytological yield, only those who are confident in performing the procedure should perform this test. There are a number of GPs who possess the skills needed to undertake this procedure, but it is more widely considered the domain of specialists. Material obtained must be examined by an experienced cytologist.¹⁶

FNAB is a diagnostic tool. While generally having few side effects, most commonly pain and minor bruising, fine needle biopsy can cause severe bruising and very occasionally pneumothorax (and in theory, pericardial tamponade) can result.

Core biopsy

Core biopsy is performed with manual, ultrasonic or radiological (stereotactic) guidance. It is similar to FNAB except a large gauge needle is used to remove a core of tissue. This produces a greater chance of cytological diagnosis but also more possibility of side effects. This procedure is considered the domain of specialists.

Open biopsy

The definitive test to exclude cancer is the surgical excision of any area of suspicious tissue for pathological examination.¹⁴ This test is performed by surgeons and is rarely the domain of GPs. The information gleaned by pathological examination outweighs cytology and is essential in the planning of appropriate treatment modalities for carcinomas. This is an invasive procedure usually requiring a general anaesthetic and hence its side effect profile is considerably greater than all other tests discussed.

For women with a persistent, bloody or serous, single duct nipple discharge as their only symptom, further investigation is warranted.^{13,16} Cytology can be performed on the discharge, but is often unhelpful¹³ and in some overseas centres galac-tography (an x-ray of ductal system of the breast after injection with a radio opaque dye) is performed. Generally, however, open biopsy involving a microductectomy is performed in order to exclude carcinoma.

Summary

For GPs faced with the onset of breast screening programmes it is

important to differentiate between asymptomatic women who can appropriately attend screening programmes and symptomatic women who require diagnostic workup. An understanding of the usefulness of the various components of the triple test will aid GPs in counselling patients who, by definition, they must refer for investigation. For those patients in whom cancer is diagnosed, the GP needs to have a basic understanding of current treatment regimens in order to provide appropriate support to their patient.

The 1999 RNZCGP Guidelines for the early detection of breast cancer in primary care provide a more comprehensive guide and evidence-based suggestions for primary care practitioners in New Zealand.¹⁶

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