SYMPTOMS ASSESSMENT AND GUIDELINES FOR REFERRAL

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"Bathsheba bathing" by Rembrandt. The model was Rembrandt's mistress, and much discussion has surrounded the shadowing in her left breast and whether this represents an underlying malignancy.

A breast lump, which may be painful, and breast pain constitute over 80% of the breast problems that require hospital referral, and breast problems constitute up to a quarter of the general surgical workload.

Prevalence of presenting symptoms in patients attending a breast clinic

Breast lump	36%
Painful lump or lumpiness	33%
Pain alone	17.5%
Nipple discharge	5%
Nipple retraction	3%
Strong family history of breast cancer	3%
Breast distortion	1%
Swelling or inflammation	1%
Scaling nipple (eczema)	0.5%

Guidelines for referral to hospital

Conditions that require hospital referral

- All patients with a discrete mass (aspiration of masses by general practitioners is not encouraged because bruising can follow aspiration of a solid mass, making subsequent assessment difficult)
- Nipple discharge in patients aged over 50, and bloodstained, persistent, or troublesome nipple discharge in younger patients
- Mastalgia that interferes with patient's lifestyle or sleep and which has failed to respond to reassurance, simple measures such as wearing a well supporting bra, and common drugs
- Nipple retraction or distortion, change in skin contour, or nipple eczema
- Request for assessment by a patient with a strong family history of breast cancer
- Asymmetrical nodularity that persists at review after menstruation

Patients who can be managed, at least initially, by their general practitioner

- Young patients with tender, lumpy breasts and older patients with symmetrical nodularity, provided that they have no localised abnormality
- Patients with minor and moderate degrees of breast pain who do not have a discrete palpable lesion
- Patients aged under 50 who have nipple discharge that is from more than one duct or is intermittent and is neither bloodstained nor troublesome

When a patient presents with a breast problem the basic question for the general practitioner is, "Is there a chance that cancer is present, and, if not, can I manage these symptoms myself?"

For patients presenting with a breast lump, the general practitioner should determine whether the lump is discrete or is an area of lumpiness or nodularity. A discrete lump stands out from the adjoining breast tissue, has definable borders, and is measurable. Nodularity is ill defined, often bilateral, and tends to fluctuate with the menstrual cycle.

Assessment of symptoms

Positions in which breast should be inspected. Skin dimpling in lower part of breast only evident when arms are elevated or pectoral muscles contracted.

Skin dimpling (left) and change in breast contour (centre) associated with underlying breast carcinoma; skin dimpling in both breasts (right) due to breast involution.

Breast palpation.

Assessment of regional nodes.

Mammography.

Patient's history

Details of risk factors, including family history and current medication, can be obtained with a simple questionnaire to be completed by a patient while waiting to be seen in the outpatient clinic. The duration of any symptom is important—breast cancers usually grow slowly, but cysts may appear overnight.

Clinical examination

Inspection should take place in a good light with the patient with her arms by her side, above her head, and pressing on her hips. Skin dimpling or a change in contour is present in a high percentage of patients with breast cancer. Although usually associated with an underlying malignancy, skin dimpling can follow surgery or trauma, be associated with benign conditions, or occur as part of breast involution.

Breast palpation is performed with the patient lying flat with her arms above her head, and all the breast tissue is examined with the hand held flat. Any abnormality should then be further examined with the fingertips and assessed for deep fixation by tensing the pectoralis major—accomplished by asking the patient to press on her hips. All palpable lesions should be measured with callipers.

Assessment of axillary nodes—Once both breasts have been palpated the nodal areas are checked. Clinical assessment of axillary nodes is often inaccurate: palpable nodes can be identified in up to 30% of patients with no clinically significant breast or other disease, and up to 40% of patients with breast cancer who have clinically normal axillary nodes actually have axillary nodal metastases.

Mammography

Mammography requires compression of the breast between two plates and is uncomfortable. Single views of each breast can be taken obliquely, or two views—oblique and craniocaudal—can be obtained. With modern film screens a dose of less than 1.5 mGY is standard. Mammography allows detection of mass lesions, areas of parenchymal distortion and microcalcifications. Because breasts are relatively radiodense in women aged under 35, mammography is rarely of value in this age group.

Mammograms showing (left) two mass lesions in left breast irregular in outline with characteristics of carcinomas, and (right) a mass lesion with the extensive, branching, impalpable microcalcification characteristic of carcinoma in situ.

Ultrasound scans showing clear edges of fibroadenoma (left) and indistinct outline of carcinoma (right).

Ultrasonography

High frequency sound waves are beamed through the breast, and reflections are detected and turned into images. Cysts show up as transparent objects, and other benign lesions tend to have well demarcated edges whereas cancers usually have indistinct outlines.

Cell smear showing malignancy—cancer cells are lying singly, and they and their nuclei vary substantially in size and shape.

Fine needle aspiration cytology

Needle aspiration can differentiate between solid and cystic lesions. Aspiration of solid lesions requires skill to obtain sufficient cells for cytological analysis, and expertise is needed to interpret the smears. In a few centres cytopathologists take the specimens, but aspirations are usually performed by a clinician. A 21 or 23 gauge needle is attached to a syringe, which is used with or without a syringe holder. The needle is introduced into the lesion and suction is applied by withdrawing the plunger; multiple passes are made through the lesion. The plunger is then released, and the material is spread onto microscope slides. These are then either air dried or sprayed with a fixative, depending on the cytologist's preference, and are later stained. In some units a report is available within 30 minutes.

Core biopsy

A small core is removed from the mass by means of a cutting needle technique. Several needles are available, and some can be combined with mechanical devices to allow the procedure to be performed single handed.

Open biopsy

Open biopsy should be performed only in patients who have been appropriately investigated by imaging, fine needle aspiration cytology, and, if appropriate, core biopsy. Women who are told that investigations have shown their lesion to be benign rarely request excision.

Breast biopsy is not without morbidity. A fifth of patients develop either a further lump under the scar or pain specifically related to the biopsy site.

Indications for excision of breast lesion

- Diagnosis of malignancy on cytology that is not supported by results of other investigations when a mastectomy or axillary clearance is planned
- Suspicion of malignancy on one or more investigations even when other investigations indicate that lesion is probably benign
- Request by patient for excision
- Some units excise all symptomatic discrete breast masses in patients aged over 40

The routine use of frozen section to diagnose breast cancer is no longer acceptable

Other techniques such as computed tomography, magnetic resonance imaging, thermography, radioisotope studies, nipple cytology, and ductography have no role in routine investigation of patients with breast problems

Frozen section

Frozen section should be used only in the following circumstances:

- Confirmation of a cytological diagnosis of malignancy before proceeding to definitive surgery (such patients should already have been told that their lesion is malignant and have been appropriately counselled, with discussion of all treatment options)
- Assessment of excision margins for a wide local excision to ensure complete excision
- Assessment of axillary nodes to identify patients who are node negative and who require only a limited dissection

Accuracy of investigations

Accuracy of investigations in diagnosis of symptomatic breast disease

	Clinical examination	Mammography	Ultrasonography	Fine needle aspiration cytology
Sensitivity for cancers*	86%	86%	82%	95%
Specificity for benign disease†	90%	90%	85%	95%
Positive predictive value for cancers‡	95%	95%	90%	99.8%

*% Of cancers detected by test as malignant or probably malignant.

†% Of benign disease detected by test as benign.

‡% Of lesions diagnosed as malignant by test that are cancers.

False positive results occur with all diagnostic techniques. It is now routine to plan treatment on the basis of malignant cytology supported by a diagnosis of malignancy on clinical examination and imaging. Cytology has a false positive rate of about two per 1000, and the lesions most likely to be misinterpreted are fibroadenomas and areas of breast that have been irradiated. The sensitivity of clinical examination and mammography varies with age, and only two thirds of cancers in women aged under 50 are deemed suspicious or definitely malignant on clinical examination or mammography.

Triple assessment

Triple assessment is the combination of clinical examination, imaging (mammography for women aged 35 or over and ultrasonography for women aged under 35), and fine needle aspiration cytology. In a recent series of 1511 patients with breast cancer having triple assessment, only six patients (0.2%) had lesions that were considered to be benign on all three investigations.

Sensitivity of clinical examination and mammography by age.

Advantages and disadvantages of techniques for assessment of breast masses

Technique	Advantages	Disadvantages
Clinical examination	Easy to perform	Low sensitivity in women aged ≤50
Mammography	Useful for screening women aged ≥50	Requires dedicated equipment and experienced personnel Low sensitivity in women aged ≤50 Unpleasant (causes discomfort or actual pain)
Ultrasonography	Same sensitivity in all ages Useful in assessing impalpable lesions Painless	Operator dependent Less sensitive and less specific than clinical examination or mammography
Fine needle aspiration cytology	Cheap High sensitivity Provides definitive diagnosis in most instances Low incidence of false positives	Operator dependent Needs experienced cytopathologist Painful

Investigation of breast symptoms

Investigation of breast mass.

Investigation of nipple discharge.

Investigation of nipple retraction.

Breast mass

All patients should be assessed by triple assessment. It is not necessary to excise all solid breast masses, and a selective policy is recommended based on the results of triple assessment.

Nipple discharge

Treatment depends on whether the discharge is spontaneous and whether it is from one or several ducts. If the discharge is red or brown in colour the presence of blood should be checked by testing for haemoglobin. All patients with spontaneous discharge should have clinical examination and, if aged over 35, mammography. Physiological nipple discharge is common: two thirds of premenopausal women can be made to produce nipple secretion by cleansing the nipple and applying suction. This physiological discharge varies in colour from white to yellow to green to blue-black.

Physiological breast secretions collected from non-pregnant women. Note range of colours from white to blue-black.

Nipple retraction

Slit-like retraction of the nipple is characteristic of benign disease whereas nipple inversion, when the whole nipple is pulled in, occurs in association with both breast cancer and inflammatory breast conditions.

Breast pain

Cyclical breast pain should be differentiated from non-cyclical pain, and its severity should be assessed by means of a careful history and a pain chart. Mammography or ultrasonography is indicated in patients with either unilateral persistent mastalgia or localised areas of painful nodularity. Focal lesions should be investigated with fine needle aspiration cytology.

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The ABC of Breast Diseases has been edited by J Michael Dixon.