Care of Breast Cancer Patients in Family Practice

The role of the family physician in early diagnosis and investigation of potentially cancerous breast lesions is crucial. Initiating the appropriate investigations and referral can ensure these women receive the best oncologic treatment possible.

By Carl Brown, MD, and Daphne Mew, MD

Case Presentation
Ms. D, a 42-year-old woman, comes to the office expressing concern about a lump in her left breast, which she noticed while showering. Her best friend was recently diagnosed with breast cancer found on a screening mammogram and she is concerned this lump may be cancerous. She is very anxious and would like to have surgery immediately to remove what she feels is cancer before it is too late.

Question: What investigations should be performed to ensure an accurate diagnosis?

Dr. Brown is fifth-year resident in surgery, Foothills Medical Centre, Calgary, Alberta.

Dr. Mew is clinical assistant professor of surgery, University of Calgary, and faculty member, Tom Baker Cancer Centre and Foothills Medical Centre, Calgary, Alberta.
The discovery of a breast lump or an abnormal finding on mammography are common reasons women present to their family doctor. While the majority of breast lumps are not cancerous, proper investigation and treatment of all lesions is crucial to the presenting patients' psychologic and physical well-being.

A new diagnosis of breast cancer (BC) occurs among one in 1,000 women per year in Canada, and this rate has been steadily rising over the past decade (Figure 1). Approximately one in eight women will develop BC at some point, and about one in 30 women will die from it.

**Diagnosis**

**History and physical examination**

The patient that presents with a suspicious lump or a mammographic abnormality should be assessed clinically with a thorough history and physical examination. The history should focus on the presentation of the lump and the associated risk factors (Table 1). Changes in size related to menstruation, or stable size for a long period of time, are both suggestive of benign disease.

Ideally, the breast examination should be performed one week after the patient’s last menstrual period in order to minimize breast swelling. A systematic assessment of the four quadrants of the breast — including the tail, extending into the axilla — should be conducted with the patient in the supine position. The raised arm should be behind her head. Moreover, a thorough evaluation of the axilla, infraclavicular, supraclavicular and cervical lymph node beds should be undertaken to rule out metastatic disease.

**Fine Needle Aspirate (FNA)**

The FNA is a sensitive and specific tool in expert hands. It is easy to perform in the office setting if...
Figure 1. Incidence of breast cancer in Canada over the past 30 years.
Breast Cancer

Table 1

Risk Factors

• Early menarche
• Late menopause
• Nulliparity
• Previous diagnosis of atypical hyperplasia,
• Ductal carcinoma in situ, lobular carcinoma in situ or BC
• Previous radiation treatment
• Strong family history of cancer

there is a palpable mass to aspirate, and pathologic results should be available quickly.

If the aspirate is non-bloody fluid and the mass disappears, the physician can confidently diagnose a benign cyst and spare the patient extensive investigation and anxiety. Reassessment in three to six months is adequate follow-up in these cases and re-aspiration is not uncommon. If the lump recurs a second time, the patient should be assessed by a surgeon. If the aspirate reveals bloody fluid, it should be sent for cytologic evaluation and the diagnosis of BC cannot be excluded.

In the setting of a solid mass, multiple passes with a 20-gauge needle through the center of the mass should provide adequate sampling for immunohistochemistry analysis. If there are clinically suspicious lymph nodes, these also should be assessed with FNA.

A significant drawback of FNA is that a needle track hematoma may limit the usefulness of radiologic imaging. Consequently, most authors recommend delaying FNA until after mammography and/or ultrasound evaluations have been completed.

FNA is a sampling technique that helps determine if a lesion contains cancerous cells or not. The presence of malignant cells or indeterminate results necessitate surgical assessment. Moreover, a negative FNA result in the presence of a lesion with high clinical suspicion for cancer should never preclude the patient from undergoing an open surgical biopsy.

Mammography

Mammography has had a profound impact on the diagnosis and treatment of BC. Screening mammography is felt to be responsible for women presenting with earlier stage, more easily treatable cancers, over the past 30 years. While there is controversy over the utility of screening women under the age of 50,1 several trials have shown a clear advantage to yearly mammograms in women over the age of 50.

All women over the age of 30, who present with a palpable mass suspicious for cancer, should have a diagnostic mammogram. Mammographic evidence of spiculated microcalcifications and architectural distortion is highly suspicious for malignancy. While the mammographic assessment of the primary lesion can provide clues regarding its malignant potential, it is more important for its ability to identify other suspicious areas in the same breast or the contralateral breast. Synchronous breast neoplasm occurs in up to 3% of women with BC. Unfortunately, younger women tend to have denser breast tissue, which limits the usefulness of mammography.

Ultrasound

The primary utility of ultrasound is to distinguish between solid and cystic lesions. This can be a useful adjunct in younger women in whom mammography is not helpful. Also, many medical facilities can perform ultrasound-guided FNA of solid or cystic lesions, which are difficult to palpate. Currently, there is no evidence to support the use of ultrasound as a screening tool.
Vacuum-Assisted Core Needle Biopsy

Also known as mammotome biopsy or stereotactic core biopsy, the vacuum-assisted core needle biopsy has revolutionized the way nonpalpable lesions discovered on screening mammograms are managed. Historically, these lesions would be surgically biopsied after the radiologist placed a wire in the lesion to guide the surgeon. Now, the radiologist inserts a needle into the lesion with x-ray guidance and takes multiple samples with a suction biopsy apparatus. This provides both cellular and architectural information about the lesion, which helps expedite management planning. Unfortunately, this option is not available in all centers.

Surgical Biopsy

Surgical biopsy continues to play an important role in the diagnosis and management of BC. This procedure can either be performed under local or general anesthetic, and usually the patient is able to go home the same day. Biopsy is indicated when FNA reveals indeterminate results or when mammotome biopsy is not available to attain a tissue diagnosis. The biopsy results not only define a lesion as malignant or benign, but also distinguish between DCIS and invasive cancer.

Pathology

There are two distinct cancer diagnoses that are reported: carcinoma in situ and invasive carcinoma. Each of these have characteristics that are important in their management, which will be discussed below.

Carcinoma in situ

DCIS is a premalignant lesion characterized by neoplastic cells that have not penetrated the basement membrane of the breast ducts. While technically not capable of lymph node or distant invasion at this point, there is ample evidence to suggest DCIS progresses to invasive cancer. Important factors reported on pathology reports relating to the risk of local recurrence are outlined in Table 2.2

<table>
<thead>
<tr>
<th>Pathologic Findings In Ductal Carcinoma In Situ (DCIS)</th>
</tr>
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<tbody>
<tr>
<td>Low Risk</td>
</tr>
<tr>
<td>• Small lesion (&lt; 15 mm)</td>
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<tr>
<td>• Local recurrence 0% to 3%</td>
</tr>
<tr>
<td>• Wide resection margin (&gt; 10 mm)</td>
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<tr>
<td>• Low- or intermediate-grade DCIS</td>
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<tr>
<td>• No comedo necrosis</td>
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<tr>
<td>High Risk</td>
</tr>
<tr>
<td>• Large lesion (&gt; 40 mm)</td>
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<tr>
<td>• Local recurrence &gt; 60%</td>
</tr>
<tr>
<td>• Narrow resection margin (&lt; 1 mm)</td>
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<tr>
<td>• High-grade DCIS</td>
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<tr>
<td>• Comedo necrosis</td>
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Lobular carcinoma in situ (LCIS) is almost never detected clinically or mammographically. It usually is an incidental finding reported when a breast biopsy or mastectomy is performed for other reasons. While it requires no specific treatment, it does impart an increased risk of developing invasive ductal or invasive lobular cancer in the ipsilateral or contralateral breast.

Invasive cancer

Invasive ductal carcinoma is the pathologic diagnosis in most palpable breast lesions. There are many subtypes of ductal carcinoma (e.g., medullary, mucinoid, tubular), most of which have...
Invasive lobular carcinoma is much less common than ductal carcinoma, but its treatment and prognosis are essentially identical. Advanced forms of lobular carcinoma differ from ductal carcinoma in that they tend to metastasize to unusual locations (e.g., meninges).

**Staging**

BC staging is based on the TNM system. The size of the lesion is the key determinant of T stage (Table 3). Invasion of axillary lymph nodes heralds the presence of cancer with metastatic potential. Any distant metastasis significantly decreases a patient’s odds of surviving the disease. Invasion of supraclavicular nodes defines metastatic disease in BC, so palpable nodes in this area should either be biopsied or needled.

**Treatment**

**Surgical. DCIS**

Historically, DCIS was presented as a clinically palpable disease. As such, it was treated similar to invasive cancer — through radical mastectomy with axillary node dissection. Over time, the modified radical mastectomy (sparing the pectoralis major muscle) was shown to be just as effective, with local recurrence of 3% and a 10-year survival rate of 98%. In 1992, Silverstein et al reported their non-randomized study in which patients with DCIS less than 4 cm in diameter and with clear surgical margins were treated with simple excision of the lesion (i.e., lumpectomy, segmentectomy) and radiotherapy. These patients had similar survival to mastectomy patients, but a significantly greater local recurrence of 16%.

This has led to breast-conservation treatment (lumpectomy with radiation therapy) to be offered as an alternative to mastectomy in patients with...
DCIS. These patients are cautioned, however, that breast conservation therapy entails a higher risk of local recurrence and, consequently, higher re-operation rates. Moreover, the risks associated with radiation are not inconsequential.

The National Surgical Adjuvant Breast and Bowel Project (NSABP) B-17 investigated the role of radiotherapy in DCIS patients by randomizing 818 patients to lumpectomy or lumpectomy with post-operative radiation. They found no difference in survival at eight years follow-up, but a significant reduction in local recurrence with radiotherapy (27% vs. 12%, respectively).\(^5\)

Mastectomy, therefore, is still the most effective treatment for DCIS. Lumpectomy with post-operative radiotherapy is a reasonable alternative, but it has a higher local recurrence than mastectomy. For cosmetic reasons, breast-conserving surgery may not be appropriate for all patients. A discussion with the surgeon about the expected outcomes will allow the patient to make an informed decision. Local excision alone is associated with high local recurrence rates, but may be appropriate in individuals with low-grade lesions and wide excision margins. As DCIS in non-invasive, full axillary dissection is not part of the surgical management.

**Surgical. Invasive Cancer**

In early-stage cancer, the greatest advances in BC treatment have occurred in patients with tumors smaller than 5 cm in diameter, with no evidence of adherent or matted lymph nodes (i.e., Stage I and II). Similar to DCIS, these cancers historically were treated by complete excision of the breast, pectoralis major muscle and axillary contents. However, the NSABP B-04, one of the first trials conducted by the NSABP collaborative group, revealed there was no difference in local recurrence or survival when patients treated with radical surgery were compared with those treated with modified radical mastectomy (pectoralis muscle sparing).\(^6\)

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The movement toward less radical surgery for BC continued with the breakthrough work by Veronesi et al in 1981. They published a study of 701 women, which revealed no difference in survival with disease or disease-free survival in lesions smaller than 2 cm (negative axilla) when quadrantectomy, axillary dissection and radiotherapy were compared with total mastectomy.\(^7\)

Similarly, the NSABP B-06 extended this to include lesions up to 4 cm in size and non-adherent axillary nodal metastasis, comparing modified radical mastectomy with lumpectomy, axillary node dissection, and radiation therapy and...
lumpectomy with axillary dissection alone. This study enrolled 2,105 women, and no survival advantage was noted for any of the three management strategies with median follow-up of 12.5 years. There was a significant reduction in local recurrence, however, when breast-conserv-

**After total mastectomy, patients may choose to have either breast implants or a muscle flap mobilization to improve cosmesis at the mastectomy site.**

ing surgery was combined with radiotherapy, as compared to lumpectomy alone (39% vs. 10%).

In summary, both lumpectomy combined with radiotherapy and lumpectomy combined with mastectomy, are reasonable alternatives for patients with early-stage BC. With either approach, an axillary dissection should be performed to accurately stage the cancer and plan adjuvant therapy.

In advanced-stage cancer — in breast lesions larger than 5 cm, or any lesion with matted or adherent lymph nodes or breast tumors associated with distant metastasis (*i.e.*, Stage III or IV) — local surgical therapy has not been shown to influence survival. Initial treatment is chemotherapy with or without radiation therapy. Surgical excision is then attempted in order to provide local control of the disease. Thereafter, further chemotherapy decisions are made, based on the success of the preoperative (*i.e.*, neoadjuvant) chemotherapy.

**Role of Axillary Dissection and Sentinel Lymph Node Biopsy**

Axillary dissection has not been shown to improve survival, but is important in staging cancers appropriately. In the past 10 years, there has been speculation that BC spreads contiguously from one lymph node to the next. It is felt, therefore, that these cancers metastasize to a specific lymph node first, and then along the lymph node chain. Using radiolabeled markers and/or blue dye injected at the site of the cancer, surgeons experienced in the technique can identify the sentinel lymph node (SLN), which is the first lymph node in 90% to 97% of cases. Ideally, if the SLN is negative, then the entire axilla will be free of disease. Unfortunately, the non-randomized trials to date have shown a false-negative rate of 0% to 22%, and the impact of SLN biopsy on overall outcomes is unknown. As such, SLN biopsy should be considered experimental until a large randomized control trial has compared outcomes in SLN biopsy versus axillary dissection.

**Breast Reconstruction**

After total mastectomy, patients may choose to have either breast implants or a muscle flap mobilization to improve cosmesis at the mastectomy site. Implants require less surgery and provide reasonable results. Most skin/muscle transposition flaps involve either the transverse rectus abdominis myocutaneous (TRAM) flap or a latissimus dorsi rotation flap. These provide excellent cosmetic results, but are associated with longer operative times and hospital stays, as well as higher complication rates.

**Radiotherapy**

Radiation therapy is an important part of the breast-conserving surgery approach to early BC.
and DCIS. As previously mentioned, radiation reduces the local recurrence in these neoplasms by 29% and 15%, respectively. Radiation treatments are usually started two to three weeks post-operatively, and the dose and number of treatments vary from center to center. Contraindications to radiotherapy include pregnancy, previous thoracic irradiation and inability to lie flat and/or abduct the arm. Complications of radiotherapy include fatigue, breast erythema, edema, induration, pleuritis, pericarditis and brachial plexopathy. There is no convincing evidence that radiation therapy increases the risk of new malignancy.

Chemotherapy

Hormone therapy

Tamoxifen is a hormone that has variable estrogen-like activity in the body. In BC cells with receptors for estrogen, tamoxifen has been shown to competitively inhibit estrogen binding. In other areas of the body, however, tamoxifen has an estrogenic effect.

In DCIS, the NSABP B-24 trial revealed that patients undergoing breast-conserving surgery with radiotherapy treated with tamoxifen 20 mg daily for five years had fewer recurrences in either breast than those treated with placebo (8.2% vs. 13.4%).

In invasive BC, tamoxifen is effective adjuvant therapy when the tumor is shown to contain estrogen receptors. A recent meta-analysis by the Early Breast Cancer Trialists’ Collaborative Group showed that cancer patients treated with tamoxifen for five years had fewer recurrences (24% vs. 38%) and lower mortality (22% vs. 29%) at median 10 years follow-up.

The potential complications of tamoxifen therapy include deep venous thrombosis, pulmonary embolism and a slightly increased risk of uterine cancer. These risks are outweighed, however, by the benefits cited above.

Adjuvant chemotherapy

The role of adjuvant chemotherapy has expanded over the past 10 years. In fact, many patients with invasive BC will benefit from adjuvant chemotherapy and should discuss the risks and benefits of this with a medical oncologist.

Follow-up

After primary BC therapy, patients should be reassessed every three to six months for the first two years, and then yearly thereafter. The medical assessment should include physical examination of the breast(s), chest wall, axilla and supraclavicular space. Patients should be encouraged to
perform monthly self-breast examinations and to report any new breast lumps, cough, shortness of breath, bone pain or new onset arthritis or swelling. The results of recent mammograms should be reviewed with the patient and any questions answered.

While annual mammograms are beneficial, there is currently no role for regular chest x-ray, ultrasound or laboratory investigations in asymptomatic patients.

Conclusion
The role of the family physician in early diagnosis and investigation of potentially cancerous breast lesions is crucial. Initiating the appropriate investigations and referral can ensure these women receive the best oncologic treatment possible. Many BC patients are eligible for ongoing research trials and should be approached when appropriate. With the increasing prevalence of BC, the responsibility of post-therapy follow-up also is becoming a significant part of family practice. Knowledge of the everchanging management strategies in BC is crucial for the primary-care physician.

References

Suggested Reading

World Wide Web Resources
1. Alberta Cancer Board — Screen Test albertascreentest.org
2. BC Cancer Agency bccancer.bc.ca
3. Breast Cancer Society of Canada bcsc.ca
4. Canadian Cancer Society (1-888-939-3333) cancer.ab.ca
8. Medbroadcast.com medbroadcast.com/health_topics/womens_health/breast_cancer