

BREAST CANCER CASES

Case #1

Case #2

Case #3

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Breast Cancer Case 1

Mrs. J. is a 48-year-old woman who found a lump in her left breast on routine breast self-examination. She reported this to her family doctor. She is an otherwise healthy premenopausal woman with no significant past medical history. Her family physician ordered an ultrasound and mammogram. These investigations confirmed a 1.5 cm mass at 3 o'clock in the left breast. She subsequently saw a surgeon and underwent a core biopsy which confirmed a grade 2 adenocarcinoma. She subsequently had a lumpectomy and sentinel node biopsy.

1. What are the indications for lumpectomy versus mastectomy?
2. What are the indications and contraindications for sentinel node biopsy (SLN)?
3. What are the indications for axillary node dissection following sentinel node biopsy?

At the time of consultation at the cancer clinic, her pathology from the left lumpectomy and sentinel node biopsy has been reviewed. It reveals a 1.2 cm infiltrating ductal carcinoma with negative resection margins. Overall grade is 2. Lymphovascular invasion and perineural invasion are absent. ER and PR are both positive at 90%. Her2Neu is negative on IHC. Sentinel node biopsy is negative (0/3).

A complete history and physical examination is performed which is normal.

4. What are the main cell types of breast cancer?
5. Pathologically, what stage is this patient? Does she require any further staging investigations? If so, what tests would you order?
6. What is/are the most important feature(s) of her pathology with respect to risk of recurrence?

Mrs. J. is referred to the Cancer Centre where she is seen by a radiation oncologist who discusses the indication for radiotherapy to the breast.

7. What is this patient's risk of recurrence in the breast with and without radiation?
8. What are the toxicities associated with radiation?

She also sees a medical oncologist to discuss the role of systemic therapy in the treatment of her breast cancer.

9. What is Mrs. J.'s systemic risk of recurrence?
10. Is she a candidate of Oncotype DX testing?

Mrs. J. returns three weeks later, to review her laboratory investigations which are normal. Her Oncotype DX score came back at 10.

11. Discuss the Oncotype DX score and what it means regarding her risk of recurrence. How does it affect your recommendation regarding systemic therapy?

After reviewing the Oncotype DX result, her oncologist informs the patient that she does not require chemotherapy. She has decided to start Tamoxifen and receive radiation. She would like to know how often she would require a mammogram. Also, she would like to know what routine investigations will be done in the future, and how often they will be ordered.

12. Which adjuvant endocrine therapy (Selective Estrogen Receptor Modulators and Aromatase Inhibitors) would be possible treatment options for this patient? Would you consider ovarian suppression and aromatase inhibitor?
13. What are the risks and benefits of SERMs versus AIs?
14. How frequently should a mammogram be done?
15. What follow-up is recommended for patients such as Mrs. J.'s?
16. What is recommended regarding 'routine investigations' and is there evidence to support this recommendation?
17. If Mrs. J. was postmenopausal at diagnosis, would your recommendation for hormonal therapy change? Would her nodal status alter which adjuvant endocrine therapy you started with first, and for how long you treated her? If you offered her an aromatase inhibitor, would you also offer her an IV bisphosphonate in the adjuvant setting? Why or why not?
18. If Mrs. J. remains recurrence free at the completion of 5 years of tamoxifen, and is postmenopausal at that time, would she be a candidate for extended endocrine therapy with tamoxifen or an aromatase inhibitor? If so, what benefit regarding risk reduction would she receive?
19. Under what circumstances would you offer her 10 years of adjuvant tamoxifen? What benefits would you quote her in this setting?
20. Regarding aromatase inhibitor usage, which toxicities would you monitor for, and how would you monitor for them?

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Breast Cancer Case 2

Mrs. S. is a 56-year-old postmenopausal woman, who, on routine mammography screening was found to have a 3 cm mass in the left breast. The patient did not perform routine breast self-examination. Her surgeon could feel a non-fixed 2 cm mass in the breast as well as enlarged non-fixed lymph nodes in the left axilla.

1. What would be considered appropriate surgical management for a patient presenting with a palpable breast lump?

Her surgeon discussed the pros and cons of lumpectomy and radiation versus mastectomy. Mrs. S. decided to have a mastectomy, as she felt uncomfortable without complete removal of the breast. She underwent a lymph node biopsy and axillary node dissection at the time of her mastectomy. She had an uncomplicated postoperative course. She is referred to a medical oncologist for discussion of treatment options.

Her pathology reveals a 3 cm invasive ductal carcinoma with negative resection margins at 1 mm. ER/PR by immunohistochemistry are both positive. Nine of 15 nodes are positive for carcinoma (total between SLN and axillary node dissection). Perineural invasion is present, but lymphovascular invasion is absent. Her2neu is positive by FISH.

On functional inquiry, she has no cough. Pain is localized to the surgical site. She does report that she has had some low back pain in the last 3 weeks, but feels that is related to her job as a packer at a food plant.

2. What stage of disease does Mrs. Smith have, based on pathology?
3. What staging investigations are indicated for this stage of disease?
4. Would you do any further investigations, based on the results of her functional inquiry?
5. Would you refer her to Radiation Oncology for assessment, even though she has had a mastectomy with no evidence of residual disease?

Mrs. S. returns one week later, to review her staging investigations. Blood work, consisting of CBC, LFTs, Lytes, Ur, Cr, Alk Phos and Ca are all normal. Her CT chest, abdomen and pelvis is normal. Plain films of her lumbar spine, as well as her bone scan are negative.

6. What treatment recommendations do you make to Mrs. S. regarding adjuvant systemic therapy?
7. What is the significance of her Her2neu positivity?
8. How effective is chemotherapy in decreasing her risk of recurrent disease?
9. Is she a candidate for trastuzumab? If so, what toxicities does she need to be informed of?
10. How effective is trastuzumab in decreasing her risk of recurrence?
11. How often should a MUGA scan (or echo) be done during treatment and post-treatment?
12. How is the trastuzumab given, with respect to the administration of chemotherapy and radiation?

13. Would your treatment recommendations differ if she were triple negative? Does she require genetic testing because of a triple negative status?
14. Post-treatment, what follow-up does she require?

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Breast Cancer Case 3

Mrs. S. is a 43-year-old premenopausal woman referred by her surgeon. She presented to her family doctor with a large mass in the left breast. She had fallen three months earlier, and experienced trauma to the left breast. There was a bruise and some tenderness. When it didn't resolve, she saw her family doctor. Ultrasound and mammogram were suspicious for a malignant lesion. Core biopsy is positive for invasive ductal carcinoma. Her biomarkers are not available at the time of her visit office assessment.

On examination she has an 8x10 cm mass in the left breast, which is not fixed to the chest wall. The nipple is slightly inverted. There is no skin breakdown or erythema. She has a fixed, 3 cm node in the left axilla. The remainder of her physical examination is normal. She is an otherwise healthy Caucasian woman. She does not take any medication and has no allergies.

Her family history reveals that her maternal grandmother had breast cancer premenopausally.

1. Clinically, what stage of disease does this patient have?
2. What further staging investigations would be appropriate?

Her staging investigations consisted of a CT chest, abdomen and pelvis, bone scan, as well as baseline blood work (CBC, electrolytes, liver function tests, urea, creatinine, calcium, and alk phos). They were all normal. The pathology from the core biopsy confirmed an invasive ductal carcinoma that was ER negative, PR negative and Her 2 neu 1+ by IHC.

3. What is her risk of systemic recurrence?
4. What are the indications for neoadjuvant systemic therapy?
5. How would you assess for response?

Mrs. S. is offered neoadjuvant systemic therapy. She has a baseline MRI which confirms 8 x 11 cm mass in the left breast and a 4 cm nodal cluster in the left axilla.

6. What systemic therapy would you offer her?

Mrs. S. completes six cycles of neoadjuvant chemotherapy with response seen on MRI post cycle #3. She then has left mastectomy and axillary lymph node dissection. Pathology shows residual ductal carcinoma measuring 1.3 cm in the breast with metastases in 2 of 12 lymph nodes. Margins are negative. Biomarkers confirm triple negative. Post-operative course is unremarkable.

Mrs. S. returns to her medical oncologist to discuss her pathology.

7. Is she a candidate for adjuvant systemic chemotherapy? If so, how would you time adjuvant systemic therapy with radiotherapy?
8. Is she a candidate for adjuvant endocrine therapy?

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Breast Cancer Case 4

Mrs. A. is a 52-year-old postmenopausal woman who was seen in the follow-up breast clinic for review. She has been experiencing low back pain for about 3 weeks. There is no radiation of the pain. It is fairly constant. She gets some relief with extra-strength Tylenol.

Her previous history reveals that she was diagnosed 5 years ago with a Stage 2 Infiltrating Ductal Carcinoma of the left breast (2.5cm, grade 3, ER/PR positive, Her2Neu negative, 1 of 9 nodes positive). She received anthracycline based chemotherapy and adjuvant post-lumpectomy radiotherapy. She has been on tamoxifen, without complication, for approximately 4 years. She was offered a switch to an AI at the two-year mark, but declined. The rest of her functional inquiry is negative. There are no significant findings on physical examination.

1. How would you investigate this patient?
2. How sensitive are the available radiological investigations?
3. Does she require any blood work? Would you check her Ca 15.3? Why or why not?

She returns two weeks later for review once her x-rays and bone scan are reported. Bone scan shows two hot spots at L2 and L5 consistent with metastatic disease. Plain films confirm degenerative changes in the L-spine. Her screening blood work is normal including her calcium, but the alkaline phosphatase is slightly elevated. CT chest, abdomen and pelvis is negative for metastatic disease elsewhere.

4. What is the role of bisphosphonates and rank ligand inhibitor in metastatic cancer of the breast to bone?
5. What recommendations would you make regarding her hormonal therapy? (consider both scenarios of her being postmenopausal and premenopausal)
6. Would you recommend chemotherapy at this time? What if she had ER/PR negative disease?
7. What is her prognosis?

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Breast Cancer Case 5

Mrs. D. is a 61-year-old woman who is referred by her surgeon for discussion regarding therapy for her recently diagnosed cancer of the right breast. She is an otherwise healthy woman, with no significant past medical history. This breast lump was detected on self-examination and ultrasound but not on routine mammography screening. FNA revealed invasive ductal carcinoma.

Surgical treatment consisted of a mastectomy and sentinel lymph node biopsy followed by axillary lymph node dissection. The pathology has been reviewed and reveals a 5 cm Infiltrating Ductal Carcinoma. Overall grade is 3. 12 of 15 nodes are positive. Resection margins are positive for a small focus of DCIS. ER and PR are negative, with both less than 1%. Her2neu is 1+ by IHC.

You see her in clinic to discuss her pathology and order staging investigations. She discloses shortness of breath and increased fatigue.

On your physical examination, you palpate a 1 cm hard node in the right supraclavicular fossa. There is decreased air entry to auscultation at the base of the right lung and dullness to percussion at the right base. The rest of her examination is unremarkable.

1. How would you investigate this patient?
2. Does the node require pathological assessment?

Chest x-ray is done before the patient leaves clinic. There is a pleural effusion involving the lower 1/3 of the right lung.

3. What other staging investigations would you do on this patient? Would you ask for a Ca 15.3? Why or why not?

Thoracentesis confirms malignant cells consistent with a breast primary. Blood work reveals elevated LFTs. CT chest, abdomen and pelvis confirm 3 small liver metastases. Bone scan is negative.

4. What would you tell the patient today regarding your findings?
5. Discuss her treatment options. What if she was ER/PR positive and HER2Neu positive?
6. What is her prognosis?

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