

# Breast Cancer



Saima Saeed MD

# Breast Cancer



- ❧ Most common cancer among women in the US
- ❧ 2nd leading cause of death in women
- ❧ 1 in 8 women will develop breast cancer
- ❧ Incidence/mortality rates have declined

# Breast Cancer



- ❧ Breast cancer increases with age
- ❧ 95% of breast cancer cases occur in women >age 40
- ❧ Highest in white women
- ❧ 2nd highest in black women

# Male Breast Cancer



- ❧ <1% of all breast cancer cases
- ❧ Estrogen/androgen ratio disruption
- ❧ BRCA positive, Li-Fraumeni, Cowden's syndrome, Lynch, syndrome, Klinefelter's syndrome, hepatic dysfunction, marijuana use
- ❧ ER/PR positive breast cancer

# Screening



- ❧ Clinical exam
- ❧ Mammogram
- ❧ MRI
- ❧ CT scans
- ❧ PET scans

# Staging



∞ 0- DCIS

∞ >98% 5 year survival

∞ I - <2 cm, negative LN

∞ 95% 5 year survival

∞ II- <2 cm 1-3 positive LN or 2.1 cm-5 cm if negative LN

∞ 85% 5 year survival

# Staging



- ❧ III- Any tumor size with >4 LN, infraclavicular, ipsilateral internal mammary, supraclavicular LN, tumors >5 cm with >1 LN, chest wall or skin involvement
  - ❧ 52% 5 year survival
  
- ❧ IV- Distant mets
  - ❧ 18% 5 year survival

# Prognosis



- ❧ Small tumor size
- ❧ Negative lymph node
- ❧ Absence of lymphovascular invasion
- ❧ Positive hormone receptor status



# Receptor Expression



- ❧ The degree of ER/PR expression is positively correlated with response to endocrine therapy
- ❧ Her2-positive status is predictive of Her2-targeted therapy

# Patient Case #1



- ❧ 65 yo woman undergoes a routine screening mammogram which shows calcifications in the left breast that have increased since her last two mammograms

# Patient Case #1



❧ Ductal carcinoma in situ

# Patient Case #1



- ❧ Lumpectomy
- ❧ DCIS
- ❧ ER/PR positive, Her2neu positive

# Patient Case #1



- ❧ Radiation and aromatase inhibitor for 5 years
- ❧ Endocrine therapy reduces the risk of developing invasive cancer in ipsilateral and contralateral breasts

# DCIS



- ❧ Lumpectomy or mastectomy if disease is extensive
- ❧ Sentinel lymph node biopsy indicated if microinvasion (< 1mm of invasion) or mastectomy in whom invasion is found on final path

# DCIS



- ❧ Represents a heterogeneous group of neoplastic lesions confined to the breast ducts and lobules
- ❧ Diagnosis has increased dramatically with the introduction of breast cancer screening mammography
- ❧ The risk of DCIS increases with age, is uncommon in women younger than 30 and is as high as 88 per 100,000 in women aged 50 to 64 years
- ❧ The risk of cancer-related death in women with DCIS is low, estimated at 1.9 percent within 10 years

# DCIS



- ❧ Most cases of DCIS are detected only on imaging studies (most commonly by the presence of mammographic microcalcifications)
- ❧ Percutaneous core biopsy under stereotactic or ultrasound guidance is preferred
- ❧ Fine needle aspiration biopsy is inadequate for the diagnosis of DCIS, as it cannot distinguish between invasive and in situ disease



# DCIS



- ❧ 80% of DCIS are ER/PR positive
- ❧ Consider TMX or Aromatase inhibitor (post menopausal)
- ❧ No survival benefit but decreases risk of recurrence of local breast cancer in involved and opposite breast.

# LCIS



- ❧ Lobular carcinoma in situ (LCIS) is a noninvasive lesion that arises from the lobules and terminal ducts
- ❧ Represents an incidental finding that is diagnosed on a breast biopsy performed for some other reason, such as an area of fibrocystic change or a fibroadenoma

# LCIS



- ❧ LCIS is more often detected in premenopausal than postmenopausal women, suggesting a hormonal influence in the development or maintenance of these lesions
- ❧ The cells of LCIS are typically ER-positive and have a very low proliferative rate

# LCIS



- ❧ 4-times more likely to develop invasive cancer
- ❧ 30% risk of developing cancer over 25 years
- ❧ Ipsilateral and contralateral breast

# Sentinel Lymph Node Biopsy



- ❧ Sentinel lymph node is the first lymph node to receive lymphatic drainage from the breast
- ❧ Lymphatic mapping done by injecting blue dye or radiolabeled tracer into the breast parenchyma near the area of cancer/mass or, alternatively, in a periareolar location
- ❧ Lymph node or nodes are removed

# Sentinel Lymph Node Biopsy (DCIS)



- ❧ **DCIS with planned mastectomy**
- ❧ **DCIS with suspicious features** — breast-conserving surgery for DCIS clinically suspected of harboring invasive cancer, including DCIS larger than 5 cm and DCIS with a palpable mass.

# Sentinel Lymph Node Biopsy (Invasive Ca)



- ❧ Early breast cancer with clinically negative node
- ❧ Fewer than three metastatic sentinel lymph nodes on SLNB
- ❧ Patients undergoing breast conserving surgery followed by whole-breast irradiation

# Axillary Lymph Node Dissection



- ❧ Three or more metastatic sentinel lymph nodes on SLNB
- ❧ One or two metastatic sentinel lymph nodes on SLNB but who do not desire whole-breast irradiation



# Patient Case #2



- ❧ 32 yo female breast with a 2 cm mass in her right breast
- ❧ Mammogram confirms a 2.3 cm mass

# Patient Case #2



- ❧ Biopsy reveals invasive ductal carcinoma grade 3  
ER/PR positive and her2 neu negative

# Patient case #2



- ❧ You refer her to a breast surgeon
- ❧ Lumpectomy and sentinel lymph node biopsy

# Patient Case #2



- ❧ Final path reveals 2.1 cm IDC ER/PR positive, her2neu negative
- ❧ Sentinel LN is negative
- ❧ Now what?

# Gene Expression Profiles



- ∞ Oncotype Dx
- ∞ Endopredict
- ∞ Breast Cancer Index

# Oncotype Dx



- ❧ The Oncotype Dx 21-gene recurrence score is a prognostic assay and may identify patients who are most and least likely to derive benefit from adjuvant chemotherapy
- ❧ Indicated for women with LN negative, ER positive, HER2 negative breast cancer

# Oncotype Dx



- ↻ RT- PCR to generate a recurrence score
- ↻ Categorizes the tumor as low, intermediate or high risk
- ↻ Low risk- adjuvant endocrine therapy alone
  - ↻ Tamoxifen versus Aromatase inhibitor
- ↻ High risk- chemotherapy
  - ↻ TC, AC-T, TAC

# Patient Case #2



- ❧ Oncotype Dx recurrence score was 5, low risk
- ❧ TMX- 5 versus 10 years
- ❧ Side effects of TMX?
- ❧ Side effects of aromatase inhibitors?
  - ❧ Letrozole, exemestane, anastrozole



# Patient Case #3



- 54 yo female who presents with a very painful and swollen left breast and palpable lymph nodes
- Mammogram confirms a 6.5 cm breast mass and left axillary LN
- Biopsy is c/w IDC ER/PR negative, her2neu positive
- Now what?

# Patient Case #3



- ❧ CT scan of chest/abd/pelvis- shows breast mass and left axillary adenopathy but no distant disease

# Patient Case #3



- ❧ Neoadjuvant chemotherapy- Her2neu targeted therapy
- ❧ Surgery
- ❧ Radiation- Lumpectomy, axillary lymph nodes, chest wall or positive margins

# Patient Case #4



- ❧ 54 yo female with history of breast cancer diagnosed 7 years ago
- ❧ Lumpectomy, SLN followed by radiation and 5 years of Tamoxifen
- ❧ Back pain for past 3 months
- ❧ Exam is unremarkable
- ❧ Treated supportively with NSAIDS, physical therapy

# Patient Case #4



☞ Now what?

# Patient Case #4



- ❧ X-ray and CT scan of her spine- widespread bone mets
- ❧ PET scan- Bone lesions but no other sites of disease
- ❧ Biopsy is done and shows IDC ER/PR positive and Her2neu negative

# Patient Case #4



- ❧ Anastrozole plus a cyclin dependent kinase 4/6 inhibitor until progression
- ❧ Bisphosphonate therapy
  - ❧ Side effects?
- ❧ Chemotherapy if any evidence of visceral crisis or progressed on multiple lines of endocrine therapy

# Questions



- ❧ A 50 yo woman underwent breast conservation surgery and radiation for Stage I triple negative breast cancer. She declined adjuvant chemotherapy. Two years later she is found to have a 1.5 cm ipsilateral relapse that on biopsy is again triple negative. Bone scan and CT scans are all negative



# Questions



- ❧ Which of the following treatment plans would provide the greatest reduction in risk of future relapse?
- ❧ A) Mastectomy
- ❧ B) Mastectomy with adjuvant chemotherapy
- ❧ C) Mastectomy with radiation and adjuvant chemotherapy

# Questions



℞ B) Mastectomy with adjuvant chemotherapy

# Questions



- ❧ A 60 yo woman with ductal carcinoma in situ was treated with breast conservation therapy, and all known disease was removed. She wants to decrease the risk of recurrent breast cancer

# Questions



- ❧ Which of the following best describes the use of adjuvant endocrine for this patient?
  - ❧ A) Adjuvant endocrine therapy will decrease recurrence, regardless of whether her cancer was ER positive or negative
  - ❧ B) If her cancer is ER positive, adjuvant endocrine tx can improve OS and and decrease ipsilateral and contralateral breast recurrence
  - ❧ C) If her breast cancer is ER positive, adjuvant endocrine therapy can decrease ipsilateral and contralateral recurrence

# Questions



- ❧ C) If her breast cancer is ER positive, adjuvant endocrine therapy can decrease ipsilateral and contralateral recurrence

# Questions



- ❧ A woman presents with 3cm axillary lymph positive breast cancer, which is ER/PR negative and Her2neu negative

# Questions



- ❧ Which of the following informs your decision of whether or not she should receive preoperative chemotherapy or proceed with initial surgery?
  - ❧ A) Neoadjuvant chemotherapy has been proven to improve survival in this situation
  - ❧ B) Initial surgery has been associated with improved survival in this situation
  - ❧ C) Neoadjuvant chemotherapy is associated with a reduction in the need for mastectomy and possibly axillary lymph node dissection

# Questions



- ❧ C) Neoadjuvant chemotherapy is associated with a reduction in the need for mastectomy and possibly axillary lymph node dissection



# Questions



- ❧ A 65 yo woman has a resected Her2neu positive breast cancer. She has been told that adjuvant trastuzumab/pertuzumab are beneficial

# Questions



- ❧ Which of the following is the appropriate length of time for her to receive adjuvant Her2neu directed therapy?
  - ❧ A) 6 months
  - ❧ B) 1 year
  - ❧ C) 2 years
  - ❧ D) Adjuvant Her2neu directed therapy is only necessary during the time that she is receiving adjuvant chemotherapy

# Questions



☞ B) 1 year

# Questions



- ☞ Which of the following patients would you refer for genetic counselling?
- a) Men with breast cancer
  - b) Women diagnosed at or under the age of 50, or with Ashkenazi heritage, and/or a strong family history of breast or ovarian cancer.
  - c) Women with triple negative breast cancer up to age 60
  - d) All the above

# Questions



℞ D) All the above