Detailed Breast Cancer Overview

1. What is Breast Cancer?

Breast cancer is a condition in which abnormal cells in the breast grow uncontrollably. It is one of the most common cancers among women worldwide. Although it mainly affects women, men can also develop breast cancer, though it's rare. The breast is made up of lobules (glands that produce milk), ducts (tubes that carry milk to the nipple), and connective tissue. Most breast cancers begin in the ducts or lobules. There are different subtypes of breast cancer, depending on which cells in the breast become cancerous. Understanding the biology of breast cancer is crucial for early diagnosis and effective treatment. Breast cancer can spread outside the breast through blood vessels and lymph vessels, a process known as metastasis. The type of breast cancer can determine the prognosis and guide treatment planning. Healthcare providers use tumor markers, imaging, and histopathology to categorize the cancer.

2. Types of Breast Cancer

There are several types of breast cancer, classified based on where they originate and their behavior:

- Non-Invasive (In Situ):
  - Ductal carcinoma in situ (DCIS): A non-invasive cancer where abnormal cells are found in the lining of a breast duct.
  - Lobular carcinoma in situ (LCIS): Abnormal cells found in the breast lobules. Although not cancer, LCIS can increase breast cancer risk.

- Invasive (Infiltrating) Breast Cancer:
  - Invasive ductal carcinoma (IDC): The most common type. Cancer has spread beyond ducts into surrounding tissue.
  - Invasive lobular carcinoma (ILC): Begins in the lobules and invades surrounding tissue.
  - Inflammatory breast cancer: Rare and aggressive. It causes redness and swelling.
  - Triple-negative breast cancer: Lacks estrogen, progesterone, and HER2 receptors. Harder to treat.
  - HER2-positive breast cancer: Overexpression of HER2 protein. Treated with targeted therapies.
  - Male breast cancer: Often diagnosed late due to lack of awareness. Usually invasive ductal type.

1. What is Breast Cancer?

Detailed Breast Cancer Overview

Breast cancer is a disease where malignant (cancer) cells form in the tissues of the breast. It occurs mostly in women but can also affect men.

Breast cancer is a disease where malignant (cancer) cells form in the tissues of the breast. It occurs mostly in women but can also affect men.

2. Types of Breast Cancer

- Non-invasive (In Situ):
  - Ductal carcinoma in situ (DCIS): confined to milk ducts
  - Lobular carcinoma in situ (LCIS): starts in milk-producing lobules
- Invasive:
  - Invasive ductal carcinoma (IDC): most common type
  - Invasive lobular carcinoma (ILC): begins in lobules and spreads
  - Inflammatory breast cancer
  - Triple-negative breast cancer
  - HER2-positive breast cancer
  - Male breast cancer

- Non-invasive (In Situ):
  - Ductal carcinoma in situ (DCIS): confined to milk ducts
  - Lobular carcinoma in situ (LCIS): starts in milk-producing lobules
- Invasive:
  - Invasive ductal carcinoma (IDC): most common type
  - Invasive lobular carcinoma (ILC): begins in lobules and spreads
  - Inflammatory breast cancer
  - Triple-negative breast cancer
  - HER2-positive breast cancer
  - Male breast cancer

3. Risk Factors

Detailed Breast Cancer Overview

Non-modifiable:

- Age (risk increases after 50)
- Gender (female)
- Family history (e.g., BRCA1/BRCA2 mutations)
- Personal history of cancer
- Early menstruation or late menopause
- Dense breast tissue
- Previous radiation therapy to chest

Modifiable:

- Obesity
- Alcohol consumption
- Smoking
- Hormone replacement therapy (HRT)
- Lack of physical activity
- Not having children or having children after age 30
- Not breastfeeding

Non-modifiable:

- Age (risk increases after 50)
- Gender (female)
- Family history (e.g., BRCA1/BRCA2 mutations)
- Personal history of cancer
- Early menstruation or late menopause
- Dense breast tissue
- Previous radiation therapy to chest

Modifiable:

- Obesity
- Alcohol consumption
- Smoking

- Hormone replacement therapy (HRT)
- Lack of physical activity
- Not having children or having children after age 30
- Not breastfeeding

4. Symptoms

- Lump in the breast or underarm
- Change in breast shape or size
- Nipple discharge (especially bloody)
- Skin changes (dimpling, redness, or peeling)
- Pain in breast or nipple
- Inverted nipple

- Lump in the breast or underarm
- Change in breast shape or size
- Nipple discharge (especially bloody)
- Skin changes (dimpling, redness, or peeling)
- Pain in breast or nipple
- Inverted nipple

5. Screening & Diagnosis

Screening Tests:

- Mammogram (gold standard)
- Clinical breast exam
- Breast self-exam
- Breast MRI (for high-risk individuals)
- Ultrasound

Diagnostic Tests:

- Biopsy (needle or surgical)

- Hormone receptor test (ER/PR)
- HER2 testing
- Genetic testing (BRCA1/BRCA2)

Screening Tests:

- Mammogram (gold standard)
- Clinical breast exam
- Breast self-exam
- Breast MRI (for high-risk individuals)
- Ultrasound

Diagnostic Tests:

- Biopsy (needle or surgical)
- Hormone receptor test (ER/PR)
- HER2 testing
- Genetic testing (BRCA1/BRCA2)

6. Stages of Breast Cancer (0-IV)

- Stage 0: DCIS (non-invasive)
- Stage I-II: Localized
- Stage III: Locally advanced
- Stage IV: Metastatic (spread to other organs)

- Stage 0: DCIS (non-invasive)
- Stage I-II: Localized
- Stage III: Locally advanced
- Stage IV: Metastatic (spread to other organs)

7. Treatment Options

Local Treatment:

- Surgery: Lumpectomy, mastectomy, lymph node dissection
- Radiation therapy

Systemic Treatment:

- Chemotherapy
- Hormonal therapy (for ER/PR-positive)
- Targeted therapy (HER2-targeted: trastuzumab)
- Immunotherapy (for some triple-negative cancers)

Local Treatment:

- Surgery: Lumpectomy, mastectomy, lymph node dissection
- Radiation therapy

Systemic Treatment:

- Chemotherapy
- Hormonal therapy (for ER/PR-positive)
- Targeted therapy (HER2-targeted: trastuzumab)
- Immunotherapy (for some triple-negative cancers)

8. Post-Treatment Follow-up

- Regular physical exams
- Annual mammograms
- Managing treatment side effects
- Monitoring for recurrence
- Lifestyle adjustments

- Regular physical exams
- Annual mammograms
- Managing treatment side effects
- Monitoring for recurrence

- Lifestyle adjustments

9. Complications

- Lymphedema
- Early menopause
- Osteoporosis
- Cardiac toxicity (from some chemo drugs)
- Recurrence or metastasis
- Psychological impact: anxiety, depression

- Lymphedema
- Early menopause
- Osteoporosis
- Cardiac toxicity (from some chemo drugs)
- Recurrence or metastasis
- Psychological impact: anxiety, depression

10. Prevention & Risk Reduction

- Maintain healthy weight
- Limit alcohol
- Regular exercise
- Breastfeeding (if possible)
- Genetic counseling for high-risk individuals
- Prophylactic mastectomy (for BRCA-positive)
- Medications like tamoxifen for high risk

- Maintain healthy weight
- Limit alcohol
- Regular exercise
- Breastfeeding (if possible)

- Genetic counseling for high-risk individuals
- Prophylactic mastectomy (for BRCA-positive)
- Medications like tamoxifen for high risk

11. Special Considerations

- Breast cancer in men
- Pregnancy-associated breast cancer
- Young women with breast cancer
- Metastatic breast cancer as a chronic illness
- Breast cancer survivorship care

- Breast cancer in men
- Pregnancy-associated breast cancer
- Young women with breast cancer
- Metastatic breast cancer as a chronic illness
- Breast cancer survivorship care

12. Family History and Genetics

- BRCA1/BRCA2 mutations
- Family history in first-degree relatives
- Other related cancers in the family: ovarian, prostate, pancreatic

- BRCA1/BRCA2 mutations
- Family history in first-degree relatives
- Other related cancers in the family: ovarian, prostate, pancreatic

13. Breast Cancer & Fertility

- Fertility preservation before treatment
- Risk of infertility due to chemotherapy

- Pregnancy after breast cancer

- Fertility preservation before treatment
- Risk of infertility due to chemotherapy
- Pregnancy after breast cancer

14. Support Systems

- Support groups
- Psycho-oncology services
- Nutritional counseling
- Palliative care and hospice (for advanced stages)

- Support groups
- Psycho-oncology services
- Nutritional counseling
- Palliative care and hospice (for advanced stages)

15. Breast Cancer in India

- Rising incidence in urban areas
- Low screening awareness
- Cultural taboos affecting early detection
- Government schemes like NPCDCS, Ayushman Bharat

- Rising incidence in urban areas
- Low screening awareness
- Cultural taboos affecting early detection
- Government schemes like NPCDCS, Ayushman Bharat

1. What is Breast Cancer?

Detailed Breast Cancer Overview

Breast cancer is a disease where malignant (cancer) cells form in the tissues of the breast. It occurs mostly in women but can also affect men.

Breast cancer is a disease where malignant (cancer) cells form in the tissues of the breast. It occurs mostly in women but can also affect men.

2. Types of Breast Cancer

- Non-invasive (In Situ):
  - Ductal carcinoma in situ (DCIS): confined to milk ducts
  - Lobular carcinoma in situ (LCIS): starts in milk-producing lobules
- Invasive:
  - Invasive ductal carcinoma (IDC): most common type
  - Invasive lobular carcinoma (ILC): begins in lobules and spreads
  - Inflammatory breast cancer
  - Triple-negative breast cancer
  - HER2-positive breast cancer
  - Male breast cancer

- Non-invasive (In Situ):
  - Ductal carcinoma in situ (DCIS): confined to milk ducts
  - Lobular carcinoma in situ (LCIS): starts in milk-producing lobules
- Invasive:
  - Invasive ductal carcinoma (IDC): most common type
  - Invasive lobular carcinoma (ILC): begins in lobules and spreads
  - Inflammatory breast cancer
  - Triple-negative breast cancer
  - HER2-positive breast cancer
  - Male breast cancer

3. Risk Factors

Detailed Breast Cancer Overview

Non-modifiable:

- Age (risk increases after 50)
- Gender (female)
- Family history (e.g., BRCA1/BRCA2 mutations)
- Personal history of cancer
- Early menstruation or late menopause
- Dense breast tissue
- Previous radiation therapy to chest

Modifiable:

- Obesity
- Alcohol consumption
- Smoking
- Hormone replacement therapy (HRT)
- Lack of physical activity
- Not having children or having children after age 30
- Not breastfeeding

Non-modifiable:

- Age (risk increases after 50)
- Gender (female)
- Family history (e.g., BRCA1/BRCA2 mutations)
- Personal history of cancer
- Early menstruation or late menopause
- Dense breast tissue
- Previous radiation therapy to chest

Modifiable:

- Obesity
- Alcohol consumption
- Smoking

Detailed Breast Cancer Overview

- Hormone replacement therapy (HRT)
- Lack of physical activity
- Not having children or having children after age 30
- Not breastfeeding