بسم الله الرحمن الرحيم
CARCINOMA OF THE BREAST

- **Breast cancer** is the commonest cause of death in middle-aged women in the Western countries and will affect half million women worldwide each year.

**Aetiological factors:**

- **Geographical.** It occurs commonly in the Western world, accounting for 3-5 per cent of deaths. In developing countries it accounts for 1-3 per cent of deaths.

- **Age.** Carcinoma of the breast is extremely rare below the age of 20.

- **Gender.** Only 1 per cent of patients with breast cancer are male.
The relationship of carcinoma of the breast to the quadrants of the breast
Genetic.

- It occurs more commonly in women with a +ve family history.
- Abnormality frequently exists in the short arm of chromosome (N.17).
- Also mutations in the $p\,53$ “tumour suppressor” gen.

- At least two genes that predispose to breast cancer have been identified—$BRCA\,1$ and $BRCA\,2$. 

Diet.

- Because breast cancer so commonly affects women in the “developed” world, dietary factors may play apart in its causation.

- There is increasing evidence that there is link between diets rich in saturated fatty acids and breast cancer and vitamin C may be protective.

- A high intake of alcohol may also be associated with an increased risk of developing breast cancer.
Endocrine.

- Breast cancer is commoner in nulliparous women, ↑ levels of estrogen ↑ risk.

- Breast feeding in particular appears to be protective. Also protective is having a first child at an early age.

- Breast cancer is more common in obese women. This is thought to be because of an increased conversion of steroid hormones to oestradiol in the body fat.

Pathology.

- Breast cancer may arise from the epithelium of the duct system any where from the nipple end of major milk ducts to the terminal duct unit which is in the breast lobule.
The degree of differentiation of the tumour is usually described by **three grades**: *Well* differentiated, *moderately or poorly* differentiated. *Ductal* carcinoma is the commonest variant, but *lobular* carcinoma occurs in up to 10 per cent of cases, although this may be *mixed*.

Rare histological variants, usually carrying a better prognosis, include *colloid carcinoma* whose cells produce abundant mucin, *medullary carcinoma* with solid sheets of large cells often associated with a marked lymphocytic reaction and *tubular carcinoma*.

*Invasive lobular carcinoma* is commonly *multifocal* and /or *bilateral*. 
The spread of mammary carcinoma

**Local spread**
- The tumour increases in size and invades other portions of the breast.

**Lymphatic spread**
- Occurs primarily to the axillary LN and to Int. Mam. LN
- In advanced cases there is involvement of supraclavicular nodes an contralateral LN.

**Bloodstream spread**
- Skeletal metastases in the lumber vertebra, femurs, thoracic vertebra, ribs and skull; they are osteolytic tumour.
- Metastases may also occur in the liver, lung and brain, adrenal gland and ovaries.
RELATIVE RISK FOR INVASIVE BREAST CANCER FOR BENIGN BREAST LESIONS

RISK FOR INVASIVE BREAST CANCER

- No Increased Risk (NIR)
  - Mastitis.
  - Fat necrosis
  - Mammary duct ectasia
  - Non-proliferative ("fibrocytic") disease
  - Fibroadenoma (simple)
RISK FOR INVASIVE BREAST CANCER

- Slightly \( \uparrow \) Risk (SIR) = \( \uparrow \) Risk 1.5 - 2 Times
  - Moderate/florid hyperplasia
  - Sclerosing adenosis
  - Fibroadenoma (complex)
  - Duct papilloma

- Moderately \( \uparrow \) Risk (MIR) = \( \uparrow \) Risk 4 - 5 Times
  - Atypical ductal hyperplasia
  - Atypical lobular hyperplasia
HISTOLOGIC CLASSIFICATION

Breast Cancer

Ductal

- DCIS (15%)
- IDC (75%)

Lobular

- LCIS (5%)
- ILC (5%)
Invasive Ductal Carcinoma

- Commonest form of breast cancer especially in poorer populations
- Increases incidence of screen-detected cancer in developed countries (usually smaller; much better prognosis)

Clinical presentation:

- Hard, irregular palpable lump.

Skin manifestations:

*Dimpling and puckering* of the skin overlying the tumour. It is due to infiltration of *cooper’s* ligaments by the tumour, pulling the skin toward the tumour.
* **Peau d’orange** (lymphatic obstruction+ thickening or tethering of the skin)

* **Cancer-en-cuirasse**: Extensive skin invasion around the chest wall.

* **Ulceration and fixation** to chest wall or a fungating mass.

* Nipple is either **retracted** or elevated.

* **Paget’s disease of the nipple** (ulceration/inflammation due to intraductal spread to the nipple)
Pea d’orange of the right breast
Clinical presentation:

- Retraction of the nipple
- Axillary mass (spread to regional lymph nodes)
- Distant mets (lung, brain, bone)
- Different histologic types exist
  - The most common is scirrhous carcinoma (IDC)
  - This type is characterized grossly by an irregular, hard mass.
  - Histology shows infiltrating clusters of malignant cells in a dense, fibrous stroma.
Invasive duct (schirrhous) carcinoma of the right breast, upper outer quadrant and stage III. Note shrinking and elevation of the breast with nipple retraction.
Staging of breast cancer

- There are two traditional systems of classification for breast carcinoma which predominantly rely on clinical staging of the disease.

- These are the **Manchester system** and the International Union Against Cancer **TNM (tumour, nodes, metastases)**.
## Staging of breast cancer

<table>
<thead>
<tr>
<th>Manchester Stage</th>
<th>Tumour grade</th>
<th>Clinical extent (cm)</th>
<th>Node grade</th>
<th>clinical extent</th>
<th>Distant metastases</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIS</td>
<td>T1s</td>
<td>No palpable tu.</td>
<td>N0</td>
<td>NO nodal metast.</td>
<td>M0 = no</td>
</tr>
<tr>
<td>I</td>
<td>T1</td>
<td>&lt; 2</td>
<td>N0</td>
<td>No Nodal metast.</td>
<td>------</td>
</tr>
<tr>
<td>II</td>
<td>T2</td>
<td>2- 5</td>
<td>N1</td>
<td>Mobile axillary LN</td>
<td>------</td>
</tr>
<tr>
<td>IIIa</td>
<td>T3</td>
<td>&gt; 5</td>
<td>N2</td>
<td>Fixed axillary LN</td>
<td>M1 = DM</td>
</tr>
<tr>
<td>IIIb</td>
<td>T4</td>
<td>Any size, invading skin or chest wall</td>
<td>N3</td>
<td>-Supra- clavicular</td>
<td>“</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td>-Distant metastases</td>
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</table>
Inflammatory carcinoma:
- Is a fortunately rare, highly aggressive cancer which presents as a painful, swollen breast, which is worm with cutaneous oedema. This is due to blockage of the subdermal lymphatics with carcinoma cells. May mimic breast abscess. A biopsy will confirm the diagnosis and show undifferentiated carcinoma cells.

Carcinoma in situ:
- Is preinvasive cancer which has not breached the epithelial basement membrane. Carcinoma in situ may be *ductal (DCIS) or *lobular (LCIS), the later often multifocal and bilateral. Mastectomy is curative.
Inflammatory carcinoma of the right breast
Paget’s disease of the nipple:

- **Superficial manifestation of an underlying breast carcinoma.** It presents as an eczema-like condition of the nipple and areola which persists in spite of local treatment.

- The nipple is *eroded slowly* and then disappears. If left, the underlying carcinoma will sooner or later become clinically evident. Thus nipple eczema should be biopsied if there is any doubt about its cause.

- **Microscopically** Paget’s disease is characterised by the presence of large, ovoid cells with abundant, clear, pale-staining cytoplasm in the Malpighian layer of the epidermis.
Paget’s disease of the nipple.
PROGNOSIS

◆ **Stage**

- Staging systems inc. TNM and the Manchester classification
- *Tumour size and axillary node status* are important parameters
- 10-year survival rate for lymph node negative disease is 80% vs 35% for tumours with positive nodes

◆ **Histological grade of the tumour**.

1- Different grading systems exist
2- ↑ tumour grade = worse prognosis
TREATMENT OPTIONS

- **Surgery**
  - *Radical Halsted mastectomy* or *Modified radical (Patey’s)* mastectomy or *simple Mastectomy*. Pectorals minor divided at (their insertion) or removed to open the axilla.
  
  - *Breast conservation*.
    
    Wide local excision or lumpectomy. *A quadrantectomy involves removing the entire segment of the breast which contains the tumour* with *axillary dissecrion* and *radiotherapy* is known as **QUART**

- **Radiation therapy** (local control)
Four structures are scarificed:

- 1- Medial pectoral nerve.
- 2- Lateral pectoral nerve.
- 3- Intercostobrachial nerve.
- 4- Acromiothoracic artery.

Four structures are preserved during Patey’s:

- 1- Nerve to serratus anterior. Nerve of Bell (injury leads to Winging of the scapula)
- 2- Nerve to latissimus.
- 3- Axillary vessels & nerves.
- 4- Cephalic vein. (If thromb. --- Brawny oedema)
Adjuvant systemic therapy

1. **Chemotherapy** (systemic control)
   Cyclophosphamide, methotrexate and 5-flurouracil for 6 cycle (CMF)

2. **Hormonal therapy** (systemic control)
   - Tamoxifen, the luteinizing hormone releasing hormone (LHRH) agonists. Zoladex=goserlin

   **Breast reconstruction**
   - Silicone gel implant under the pectoralis major M.
   - Musculocutaneous flap can be constructed either from the latissimus dorsi muscle (an LD flap) or contralateral transversus abdominis muscle (a TRAM flap)
Surgical Treatment

- Total Mastectomy
- Total Mastectomy + Skin sparing w/reconstruction
Tissue Expanders
Transversus abdominis muscle flap (TRAM) after left mastectomy
The current recommendations for adjuvant chemotherapy can be summarized as follows.
Adjuvant chemotherapy for **premenopausal** women. (Summary of NIH Consensus Conference June 18-21, 1990.)

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<th>Estrogen Receptors</th>
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### Adjuvant chemotherapy for *postmenopausal* women.

*(Summary of NIH Consensus Conference June, 1990.)*

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THE MALE BREAST

◆ Gynecomastia

- Enlargement of the male breast due to hormonal imbalance (rel. ↑ estrogens):
  - **Physiologic**: seen at puberty or old age
  - **Pathologic**: associated with cirrhosis, functional testicular tumours, certain drugs (alcohol, marijuana and anabolic steroids)

- Can be unilateral/bilateral; present as diffuse enlargement / defined mass
- Most important clinically as a marker of hyperestrinism
- Neoplasia needs to be excluded in certain cases
THE MALE BREAST

Carcinoma

- Very rare occurrence; female cancer to male cancer ratio approx 100:1

- Pathology and behavior is similar to cancers seen in women although with less breast tissue, skin involvement is more frequent
DD of hard lump of the breast

1- Carcinoma and sarcoma of the breast.
2- Plasma cell mastitis.
3- Chronic non-specific breast abscess.
4- Hard fibroadenoma.
5- Traumatic fat necrosis.
6- TB. of the breast.
7- Gamma of the breast (Syphilis).
DD of lump of the breast

I – Solid
1- Carcinoma and sarcoma of the breast.
2- Plasma cell mastitis.
3- Chronic non-specific breast abscess.
4- Traumatic fat necrosis. 5- Hard fibroadenoma
6- TB. of the breast.
7- Gamma of the breast (Syphilis).

II- Cystic
1- Galactocele 2- Cystadenoma. 3- Blood cyst
4- Chronic abscess 5- Hydatid cyst 6- Degenerated tumour.
7- Sebaceous cyst of the skin of breast.
DD of Bleeding from Nipple

1- Duct papilloma 50% (no mass is felt in the breast)
2- Duct carcinoma 25% (a mass is felt)
3- Trauma.
4- Sever acute mastitis (fulminating streptococcal i)
5- Bleeding tendency.
Precancerous lesions of the breast

1- Duct papilloma
2- Papillary cyst adenoma
3- Atypical hyperplasia (ductal or lobular)
4- Soft fibroadenoma.
Thank you

اد/ محمد عبد النعيم سيد علي
أستاذ الجراحة العامة
الجهاز الهضمي والمناظير