

*AETIOPATHOGENESIS
&
CLINICAL
PRESENTATION OF
BREAST CANCER*

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AETIOLOGY

- AGE
- GENETIC FACTORS
- GENDER
- GEOGRAPHICAL
- DIETARY FACTORS
- MENARCHE & MENOPAUSE
- ENDOCRINE FACTORS
- RADIATION
- CHILD BEARING & FERTILITY
- BREAST FEEDING
- BENIGN DUCT DISEASES

AGE

- Incidence increases with age
- Extremely rare below 20 years
- Majority of patients above 50 years
- Nearly 20% of women affected by age of 90 years



GENETIC FACTORS

- More common in women with family history
- Risk greatest in patients with 1st degree relatives
- Genetic factors contribute to only 5% of all cases but may account for 25% of cases who present before 30 years of age.
- Responsible genes→BRCA-1 & BRCA-2.
- BRCA-1
 - 17q chromosome
 - predisposes to both breast & ovarian cancer.
- BRCA-2
 - 13q chromosome
 - Restricted to breast cancer & associated with male breast cancer.

- **GENDER:**

- Females > Males
- <1 % patients are males

- **GEOGRAPHICAL**

- More common in Western countries
- In west 1:9
- In India 1:29 women

at risk

- **DIETARY FACTORS**

Increased risk with

- High intake of alcohol, saturated fatty acids
- Diet low in phytoestrogens
- Vitamin C-protective

- **AGE OF MENARCHE & MENOPAUSE**

- Increased risk with
- Early menarche & late menopause
- Risk increases 30 to 50%

ENDOCRINE FACTORS

- Small dosage of exogenous HRT for short periods in premenopausal women safe
- long term exposure to HRT significantly increases the risk.
- breast cancer m.c. in obese post menopausal women d/t ↑ed conversion of steroid hormones to oestradiol in body fat

RADIATION EXPOSURE

- Increases the risk.
- Risk is higher if radiation exposure occurred during breast development

CHILD BEARING & FERTILITY

- More common in nulliparous women.
- Protective influence of parity depends on age of patient at first child birth
- Pt's with 1st child birth after 30 years - there appears to be virtually no protective effect.

BREAST FEEDING

- Appears to be protective.
- Breast feed for 2 to 3 years decrease risk by 50%

BENIGN DUCT DISEASES

- Pathological entities such as multiple papillomatosis, gross atypia with hyperplasia are associated with increased risk.

PATHOLOGY

THE BREAST

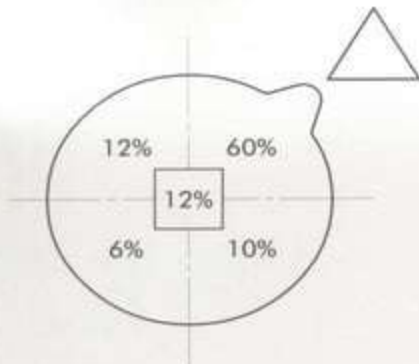


Figure 50.24 The relationship of carcinoma of the breast to the quadrants of the breast.



- Pathologically, breast cancer divided into two types, depending on their origin.
 - DUCTAL CARCINOMA
 - LOBULAR CARCINOMA



DUCTAL CARCINOMA OF BREAST

- Arises from epithelium of duct system
- 85 - 90% of all cases.
- Further divided into 2 types:-
 - Ductal carcinoma in situ
 - Invasive ductal carcinoma

DUCTAL CARCINOMA IN SITU

- Proliferation of malignant epithelial cells confined to duct system & does not invade the basement membrane or surrounding tissue
- Two histological types of ductal carcinoma in situ :
 - Comedo or solid type
 - Papillary or cribriform type

DCIS

- COMEDO TYPE

- Most common & more virulent.
- Characterised by closely packed cells within ductal spaces.
- Central necrosis which may undergo dystrophic calcifications & visible on mammography as microcalcifications.
- It may give rise to small palpable lump.

- PAPILLARY TYPE

- Characterised by papillary projections of tumor cells into ductal lumen & give rise to cribriform pattern.
- Less likely to form palpable mass & does not calcify to produce mammographic abnormality.

INVASIVE DUCTAL CARCINOMA

- Malignant epithelial cells invade the basement membrane of duct & infiltrate the surrounding breast tissue.
- Different morphological types of invasive ductal carcinoma are :
 - Scirrhous carcinoma
 - Medullary carcinoma
 - Tubular carcinoma
 - Mucinous carcinoma
 - Papillary carcinoma
 - Adenoid cystic carcinoma

SCHIRROUS CARCINOMA

- 70% of all invasive breast cancers.
- Present in perimenopausal or postmenopausal women
- **Gross** - Solitary, non tender, firm & ill defined mass
- **Cut surface** - Central radiating stellate tumor with a chalky white or yellow streak extending into surrounding parenchyma
- **Microscopy** - Cords or islands of malignant cells which infiltrate outside the ducts in variable amount of stroma
- Stromal reaction is intense & has led to term scirrhous carcinoma breast


MEDULLARY CARCINOMA

- 6 -12 % of all breast cancers.
- **Gross** : Soft,well circumscribed with uniform consistency.
- **Microscopy** : Dense lymphoreticular infiltrate composed predominantly of lymphocytes & variable number of plasma cells, syncytial sheet like growth pattern with minimal or absent tubuloacinar differentiation.
- Less frequently associated with lymph node metastasis than other types,thus associated with better prognosis.

TUBULAR CARCINOMA

- 3% of all breast cancers.
- **Gross** - cancer is small about 1 cm in diameter & scirrhous.
- **Microscopy** –
 - well differentiated.
 - Tubular differentiation is distinctive and characterised by infiltrating tubular structures lined by one cell layer & with an open central space.
- Only 10% of patients develop axillary metastasis & usually confined to small number in level 1 axillary nodes, so has a good prognosis.

MUCINOUS CARCINOMA

- Uncommon - only 2% of all breast cancers.
 - **Gross** - bulky, mucinous tumor & largely confined to elderly women.
 - **Cut surface** –
 - Glistening, glaring & gelatinous
 - Fibrosis is variable & when abundant it imparts a firm consistency to tumor.
 - **Microscopy** – large pools of mucin that surrounds variable group of tumor cells.
 - Approximately 1/3rd of cases have axillary metastasis & 5 year survival is >70%.
 - About 2/3rd of these tumors contain detectable ER receptors.
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PAPILLARY CARCINOMA

- < 2% all breast cancer
- Generally seen in old women around 70 years
- Gross –
 - small one and rarely attains size >2 to 3 cm in diameter.
 - Easily delineated from surrounding breast tissue by fibrous covering.
- Microscopy –papillae with well defined fibrovascular stalks and multilayered epithelium with pleomorphic cells.
- Lowest frequency of axillary nodal involvement.

ADENOID CYSTIC CARCINOMA

- Very rare & less than 0.1%
- **Gross** –
 - Present as small lesions 1 to 3 cm in diameter.
 - well circumscribed with well defined margins.
- **Microscopy** – Contains dense mucoid material with glandular spaces.
- Axillary metastasis are rare



LOBULAR CARCINOMA OF BREAST

- 10 - 15% of all cases.
- Subdivided into *in situ* and *invasive* forms depending on whether basement membrane of lobule has been invaded by tumor cells or not.
- **Microscopy** –
 - proliferation of small round epithelial cells within lumen of multiple breast acini.
 - So presents as multiple clusters of epithelial cells forming island of neoplastic cells maintaining lobular architecture.
 - Ducts are also expanded with proliferating cells.

LOBULAR CARCINOMA IN SITU

- Basement membrane of lobule is not invaded by tumor cells.
- Never forms a palpable mass & missed in physical examination.
- No typical mammographic finding.
- In practice, only discovered by chance in biopsy specimen undertaken for some other reasons




INVASIVE LOBULAR CARCINOMA

- Basement membrane of lobule invaded by tumor cells.
- 10% of all breast cancers.
- **Microscopy** –
 - characteristic small cells with rounded, inconspicuous nuclei & scanty cytoplasm.
- Clinically, almost similar to invasive ductal carcinoma.
- Known for bilaterality, multicentricity & multifocality.
- Examination of contralateral breast has demonstrated lesion in nearly 40% of cases.

INVASIVE LOBULAR CARCINOMA

- Difficult to differentiate from scirrhous type both clinically & microscopically.
- **Microscopy** – evidence of preinvasive tumor cells in clusters within acini in a lobule is the only diagnostic finding.
- Prognosis of invasive lobular carcinoma is better than invasive ductal carcinoma.
- Occasionally , picture may be mixed with both ductal & lobular carcinoma, in such cases immunohistochemistry analysis using E-cadherin antibody which reacts positively in lobular cancer will help in diagnosis.

INFLAMMATORY CARCINOMA OF BREAST

- Rare variety
 - Presents as painful & swollen breast.
 - Highly aggressive, tumor cells are very undifferentiated & involve subdermal lymphatics quite early.
 - Axillary lymph nodes involved quite early.
 - Frequently occurs during lactation so often called lactational carcinoma.
 - Mimics breast abscess & biopsy confirms the diagnosis.
 - Prognosis is grave.
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PAGET'S DISEASE OF NIPPLE

- Superficial manifestation of underlying breast cancer.
- Presents as an eczema like condition of nipple & areola.
- Nipple erodes slowly & eventually disappears.
- **Microscopy** –large, ovoid cells with abundant, clear, pale staining cytoplasm with small dark nuclei in malpighian layer of epidermis.
- Clinically felt as a palpable mass in subareolar area.
- Better prognosis than majority of lesions due to its early presentation.

CLINICAL FEATURES

Ca Breast

SYMPTOMS

- Lump :
 - Painless lump in breast.
 - Painful lump -inflammatory carcinoma or in advanced stage.
- Discharge through nipple:
 - bloody- ductal carcinoma,
 - greenish-fibroadenosis, but discharge may be of varying nature.
- Retraction of nipple.
- Ulceration of overlying skin with fungating lesion(advanced stage).

- Metastatic symptoms
 - Lymphadenopathy (axillary or supraclavicular)
 - Haemoptysis
 - Dyspnoea
 - Chest pain
 - Back pain
 - Jaundice etc.
- Signs:
 - **Inspection:-**
 - Nipple-raised or retracted.
 - Paget's disease nipple is eczematous.
 - Discharge from nipple.
 - Paeu d' orange.
 - Ulceration of skin.





Figure 50.23 Invasive carcinoma of the right breast. Note the thickening and elevation of the breast with nipple retraction.

COLOUR PLATE X



Fig.30.9. — Demonstration of extreme retraction of nipple due to carcinoma on the left side.



Figure 30.26 — Ulcerated carcinoma of the right breast.



Fig 30.11 — Fungating carcinoma: Note the everted edge.

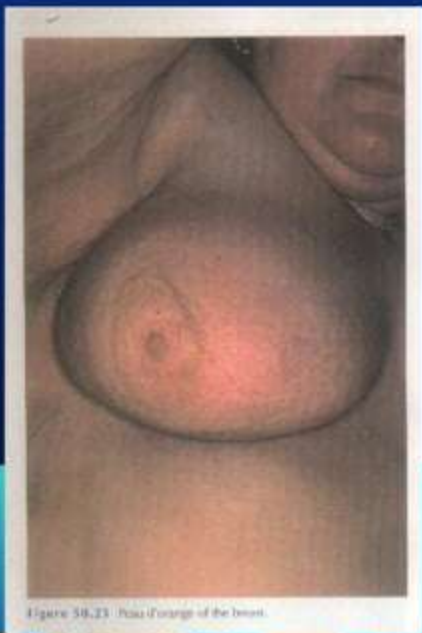


Figure 38.23 Peau d'orange of the breast.



- **PALPATION:-**
- Painless hard lump with irregular surface (\pm fixity)
- Axillary or supraclavicular lymphadenopathy (hard, may be mobile or fixed).
- Liver examination may reveal metastatic nodules.
- Vaginal examination-krukenberg's tumor of ovary or presence of peritoneal deposits in pouch of douglas.

THANK YOU

