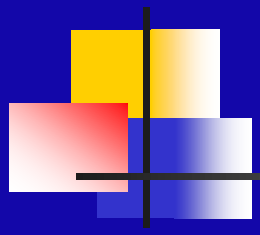
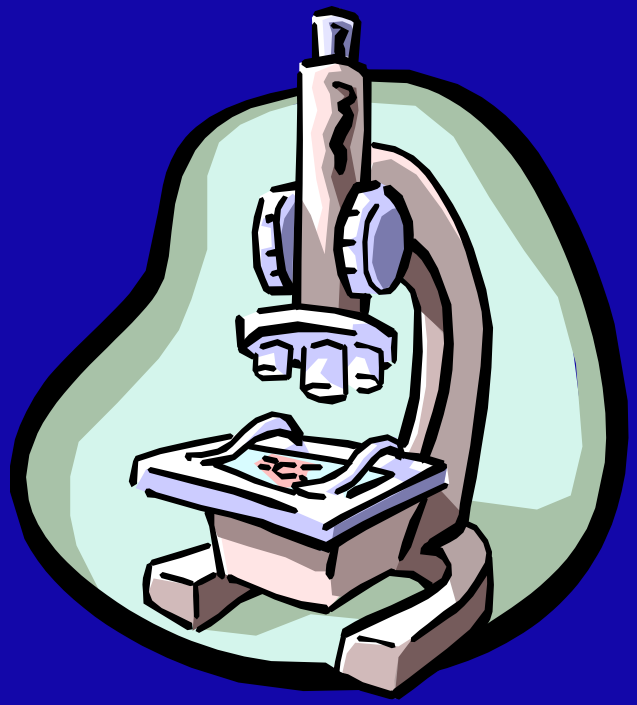


DISEASES OF THE BREAST

CLINICAL PRESENTATION

- Palpable lump
- Inflammatory mass
- Nipple discharge
- Non-palpable abnormality

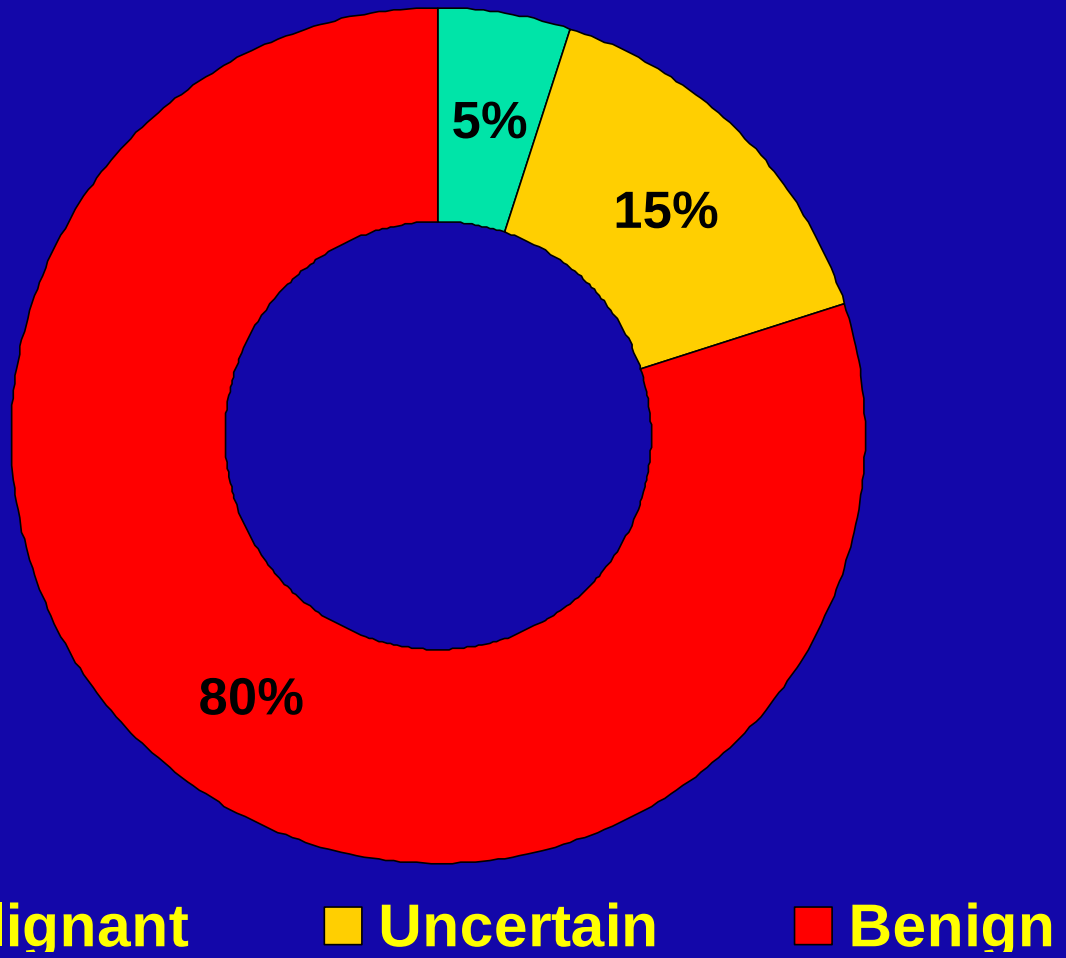
METHODS OF DIAGNOSIS

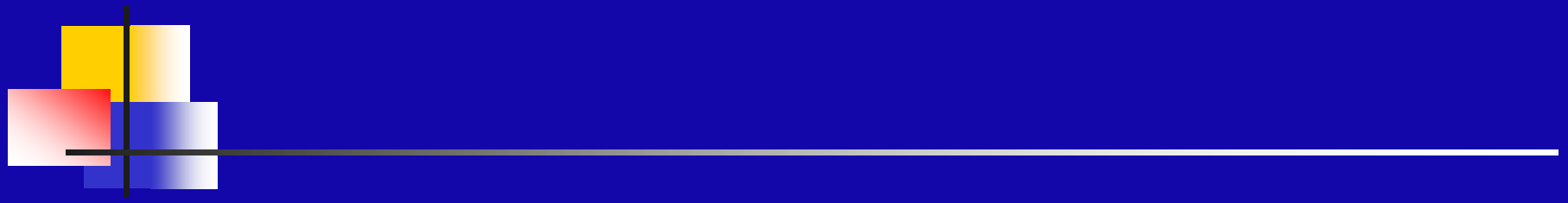


- FNAC
- Incisional biopsy
- Excisional biopsy
- Image-guided biopsy

Jamaican Breast Disease Study 2000-2

Clinical Findings





BENIGN BREAST DISEASE

INFLAMMATION

- ***Acute Mastitis***
  - **Most clinically important form of mastitis**
  - **Breast-feeding → cracks/fissures in the nipples → bacterial infection (esp. Staph. aureus)**

INFLAMMATION

- Usually unilateral—acute inflammation in the breast can lead to abscess formation
- Treatment = surgical drainage (often under general anesthesia) and antibiotics

INFLAMMATION

- ***Mammary Duct Ectasia***

- **5th and 6th decades disease**
- **Affects mainly large ducts**
- **Periductal chronic inflammation causing destruction and dilation of the ducts with fibrosis**
- **The underlying cause is unknown**

INFLAMMATION

- Poorly defined periareolar mass; can be confused clinically/radiologically with carcinoma
- Can also present as a thick, cheesy nipple discharge +/- mass
- Periductal fibrosis causes skin retraction

INFLAMMATION

- ***Fat Necrosis***
  - **Uncommon lesion; may be a history of trauma, prior surgical intervention or radiation therapy**
  - **Characterized by a central focus of necrotic fat cells with lipid-laden macrophages and neutrophils**

INFLAMMATION

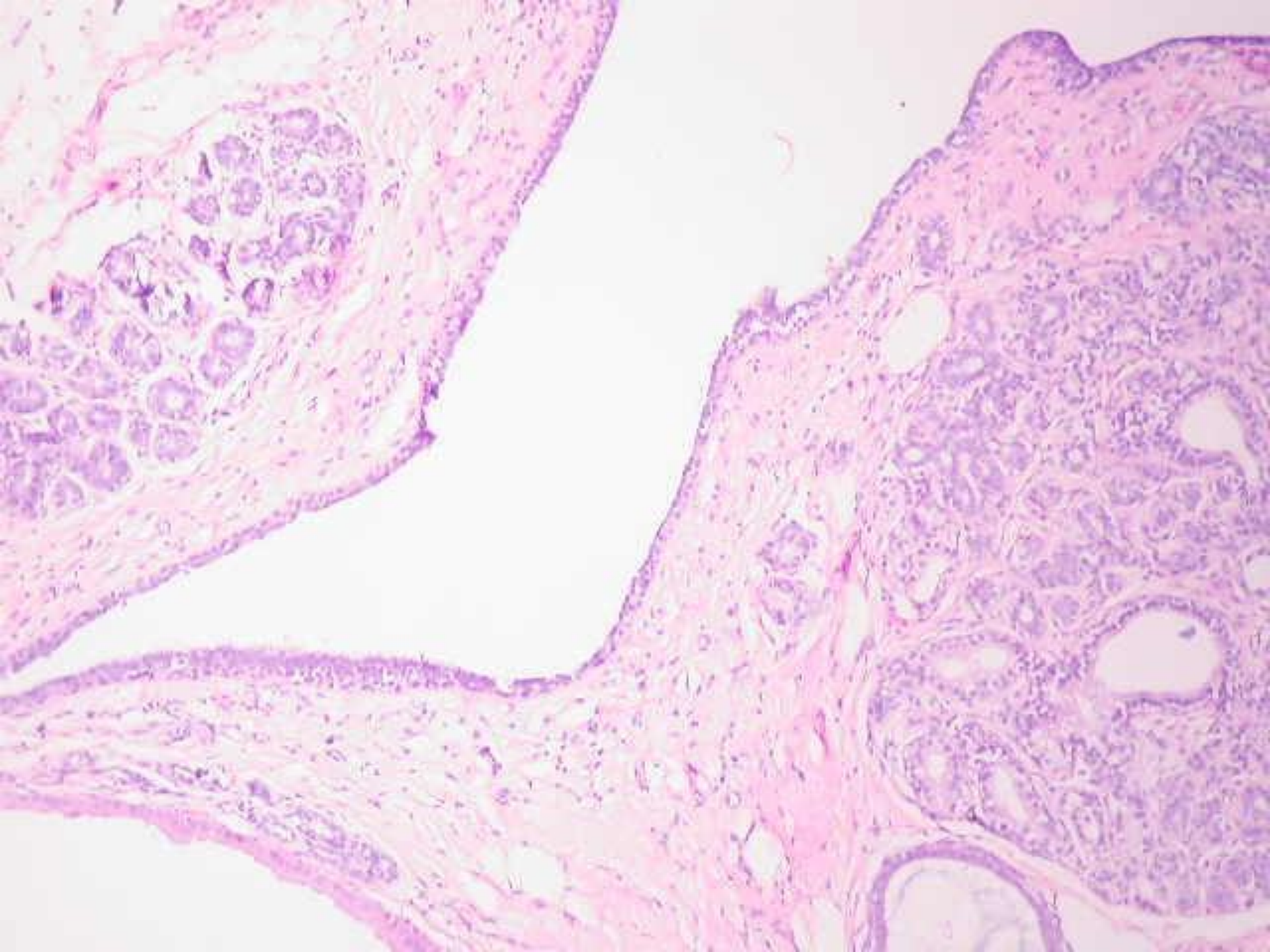
- ⮝ Chronic inflammation with lymphs and multinucleated giant cells
- Major clinical significance is its possible confusion with carcinoma (e.g. fibrosis ⮝ clinically palpable mass / Ca^{2+} seen on mammography)

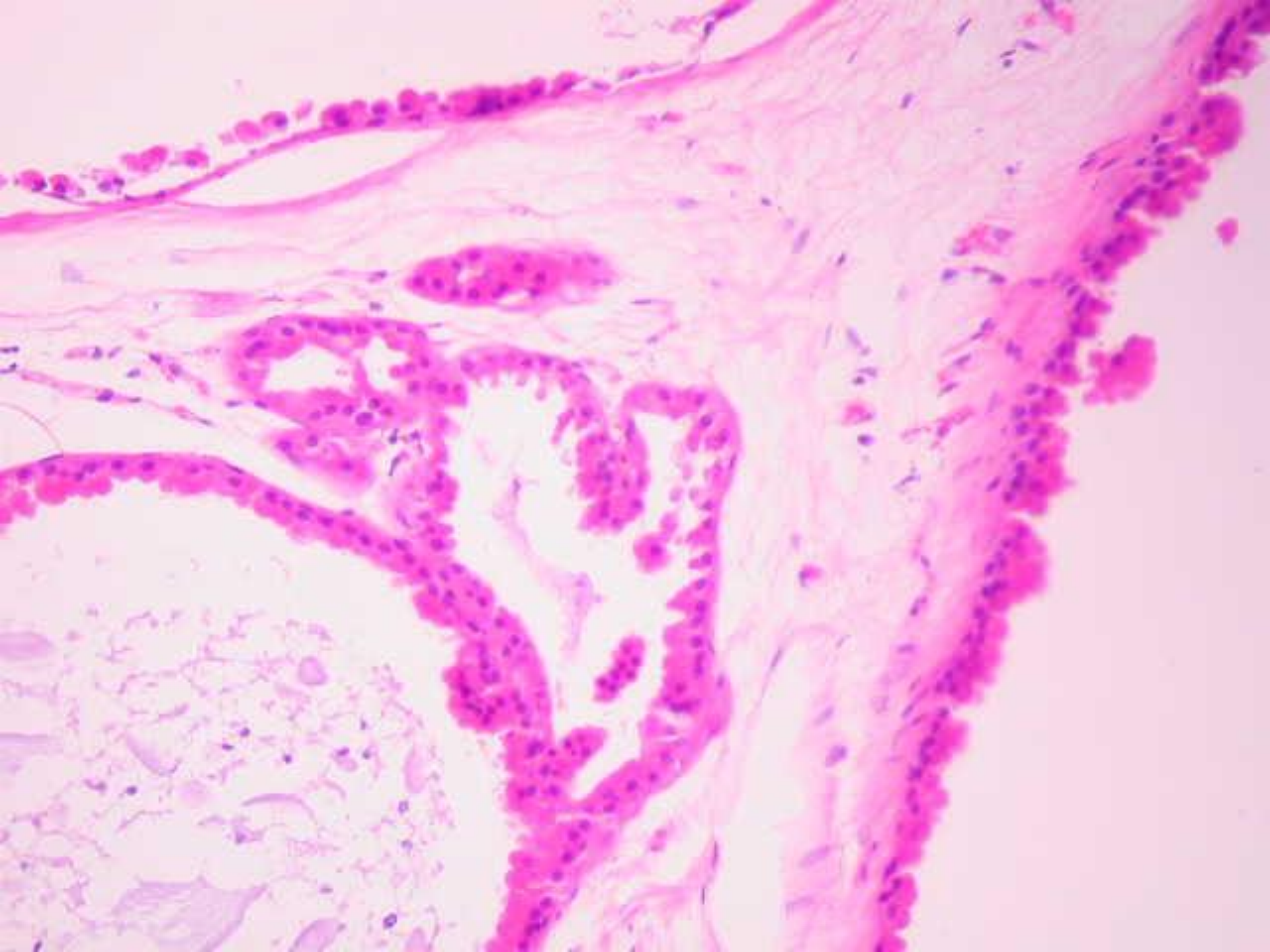
NON-PROLIFERATIVE ("FIBROCYSTIC") CHANGES

- Most common breast disorder
- Alterations present in most women
- No associated risk of progression or cancer
- ? Due to hormonal imbalances

NON-PROLIFERATIVE ("FIBROCYSTIC") CHANGES

- ***Pathologic features:***
  - **Cystic change**
  - **Apocrine metaplasia**
  - **Adenosis**
  - **Fibrosis**



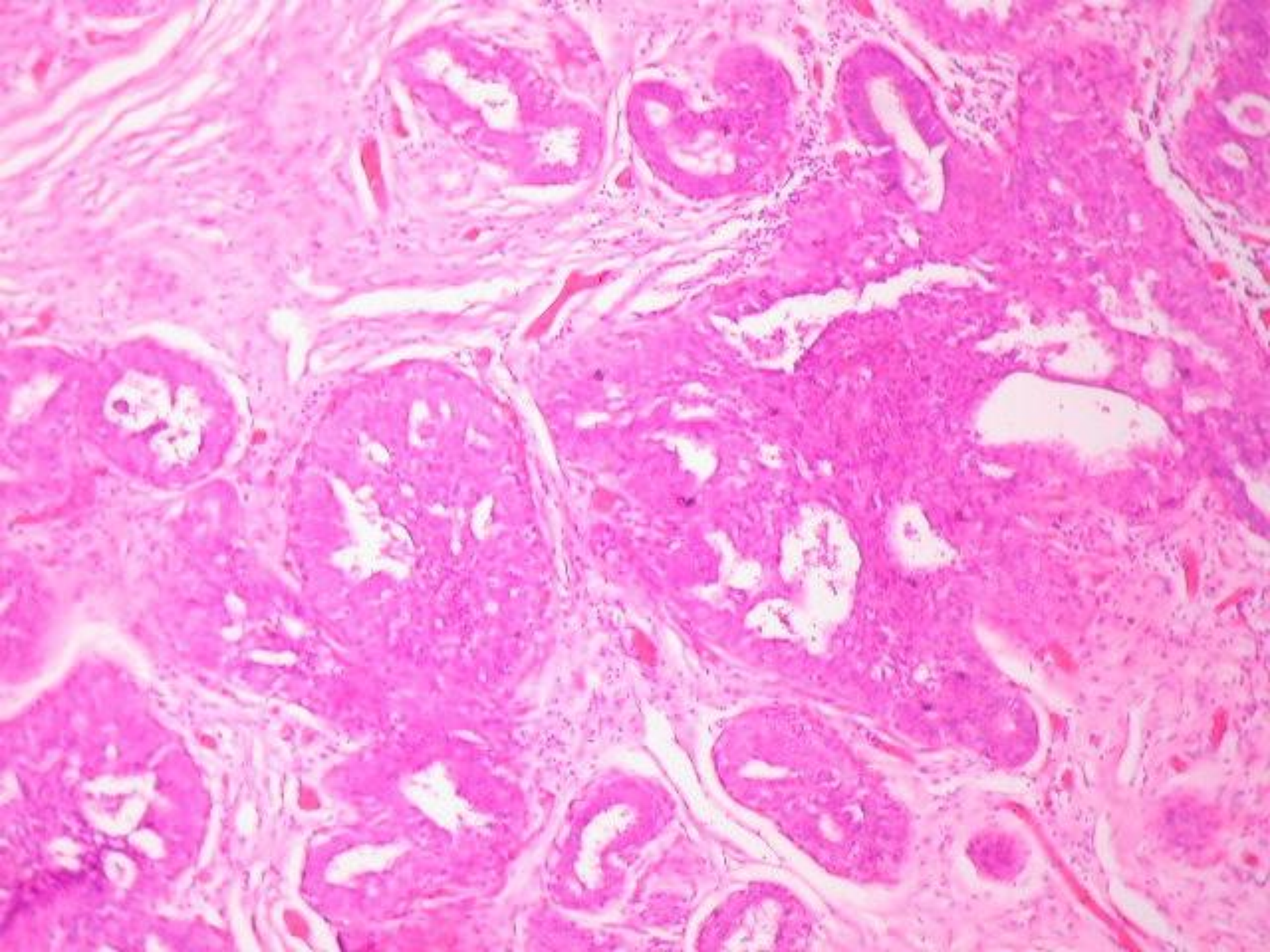


NON-PROLIFERATIVE ("FIBROCYSTIC") CHANGES

- Usually diagnosed 20 to 40 years
- Present as palpable lumps, nipple discharge or mammographic densities/calcifications
- Often multifocal and bilateral ➲ general "lumpiness"

PROLIFERATIVE DISEASE WITHOUT ATYPIA

- ***Epithelial Hyperplasia***
  - **↑ number of layers of cells lining ducts and acini**
  - **Involved ducts and acini are filled with overlapping, proliferating cells**



PROLIFERATIVE DISEASE WITHOUT ATYPIA

- ***Sclerosing Adenosis***
  - **Characterized by ↑ #acini + stromal fibrosis within lobules**
  - **Can be assoc with calcifications which may be detected on mammography**

ATYPICAL HYPERPLASIA

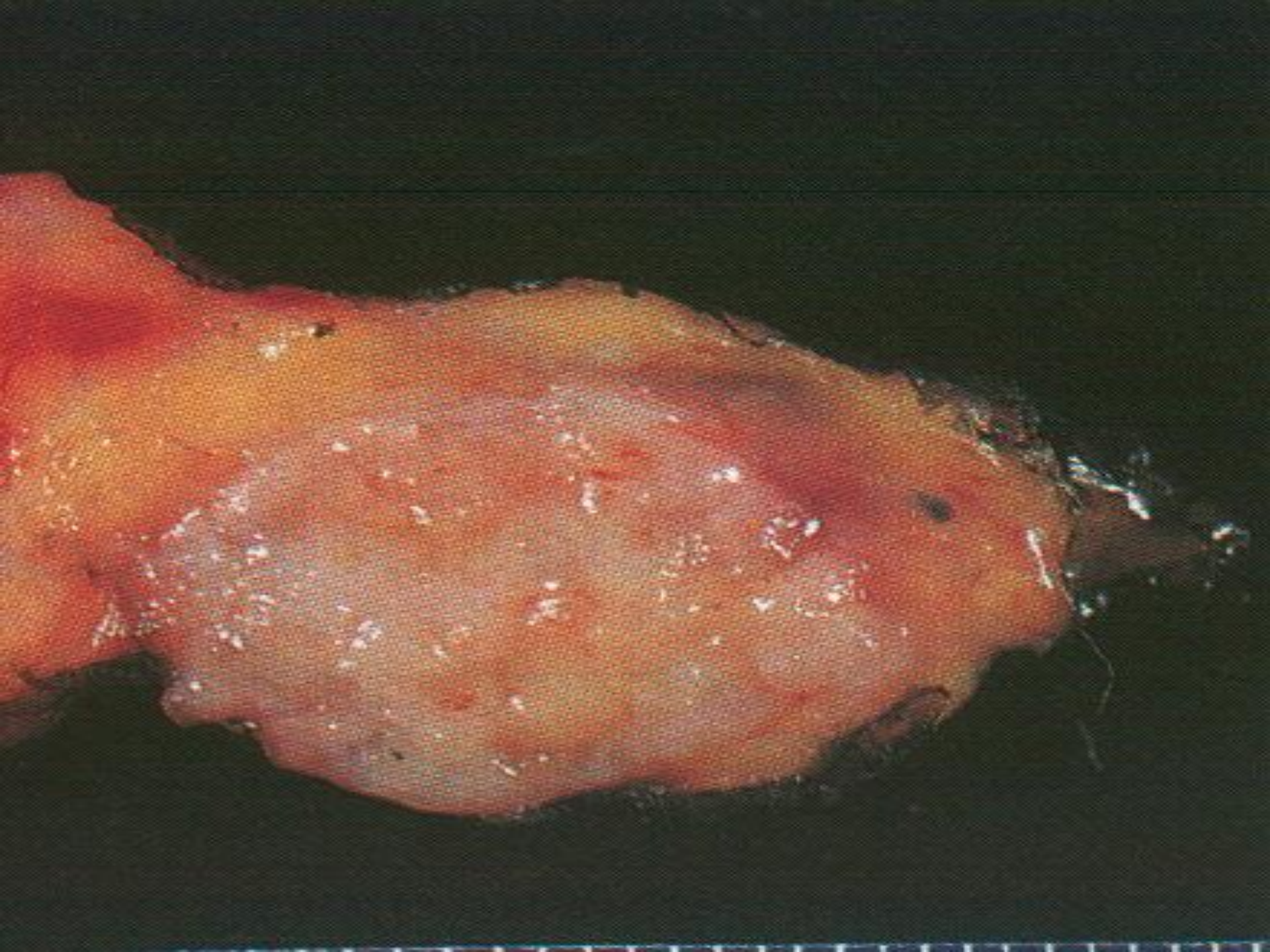
- Epithelial hyperplasia characterized atypical architectural and/or cytologic features
- Can affect ducts—atypical ductal hyperplasia, or lobules—atypical lobular hyperplasia

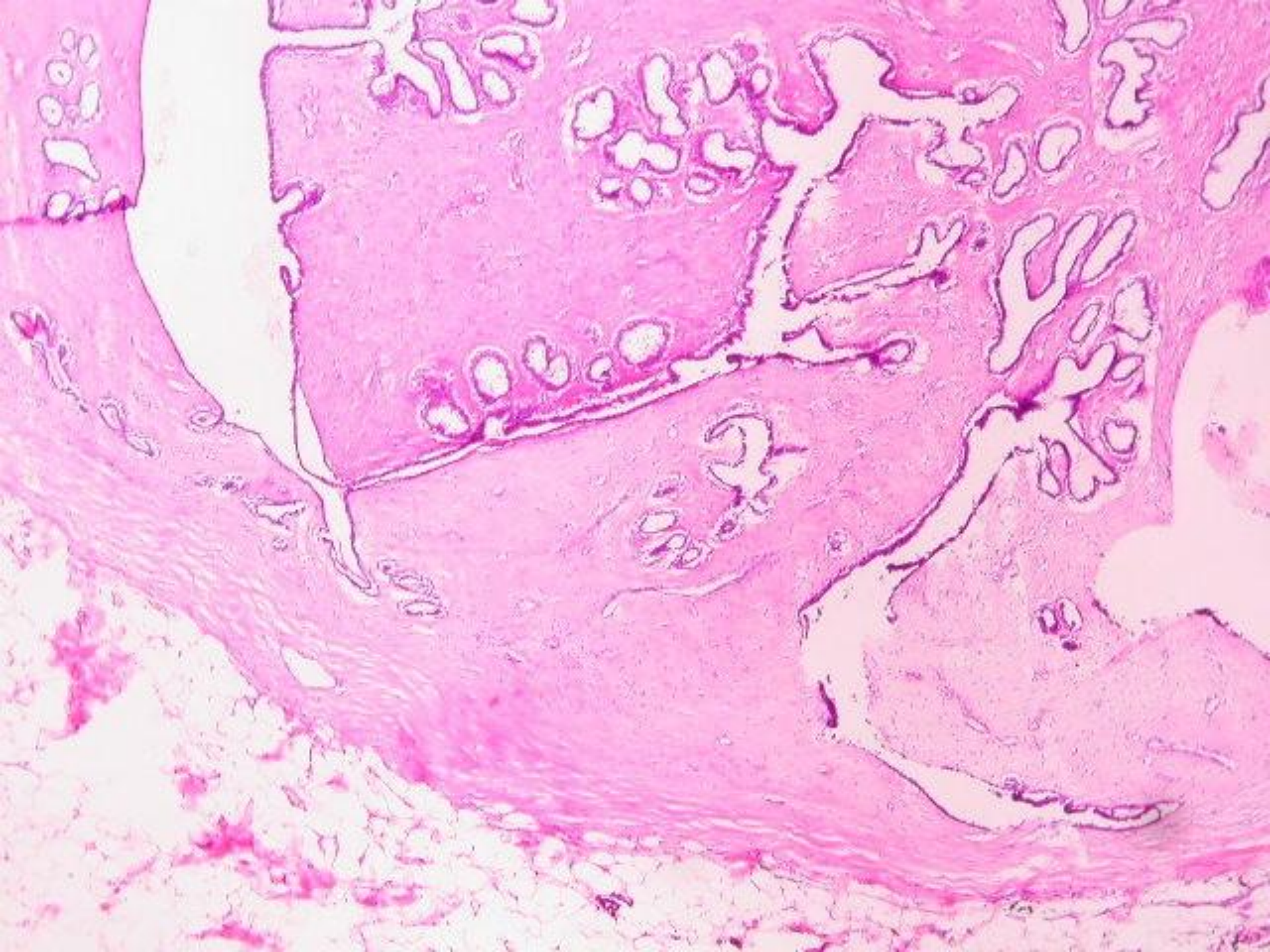
ATYPICAL HYPERPLASIA

- Atypical features resemble but fall short of in-situ cancer
- No diagnostic clinical or radiologic features
- ↑ Incidence with ↑use of screening mammography and ↑ number of breast biopsies

BENIGN TUMOURS

- ***Fibroadenoma***
  - **Most common benign tumour**
  - **Circumscribed lesion composed of both proliferating glandular and stromal elements**





BENIGN TUMOURS

- ***Fibroadenoma***

- **Patients usually present < 30 years**
- **Classic presentation is that of a firm, mobile lump hence called as"breast mouse"**
- **Giant forms can occur, especially in younger patients**

BENIGN TUMOURS

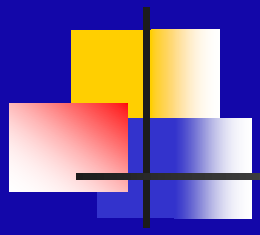
- ***Fibroadenoma***

  - **Can be associated with proliferative changes in the adjacent breast tissue**
  - **Approx. 20% of lesions are *complex fibroadenomas*—characterized by certain specific *histologic features***

BENIGN TUMOURS

Duct Papilloma

- **Benign papillary epithelial tumour; occurs mainly in large ducts**
- **Papillae are fibrovascular stalks lined by layers of proliferating epithelial and myoepithelial cells**
- **Most patients present with a serous or bloody nipple discharge**



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 ("fibrocystic") disease**
- **Fibroadenoma (simple)**

RISK FOR INVASIVE BREAST CANCER

- ***Slightly ↑ Risk (SIR) = ↑ Risk 1.5-2 Times***

- **Moderate/florid hyperplasia**
- **Sclerosing adenosis**
- **Fibroadenoma (complex)**
- **Duct papilloma**

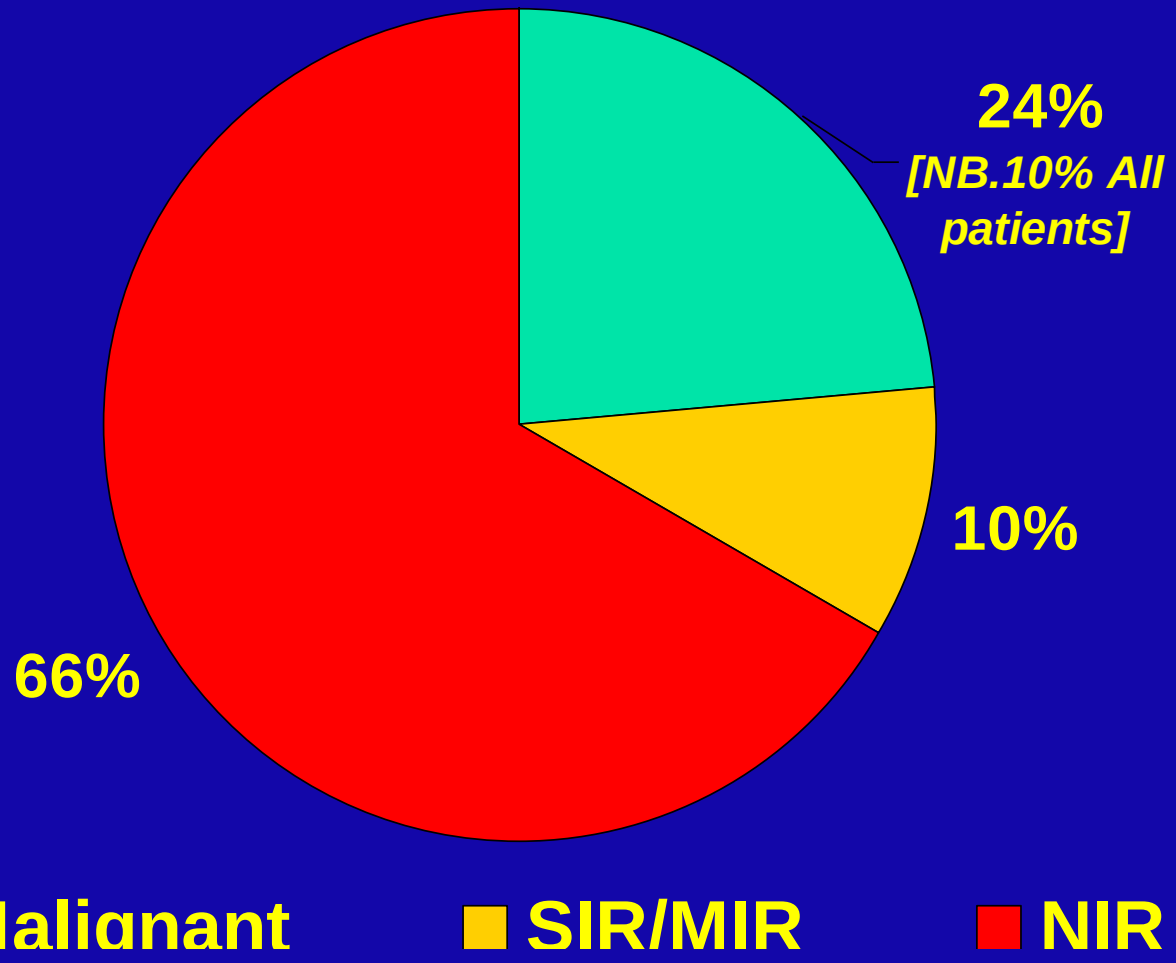
RISK FOR INVASIVE BREAST CANCER

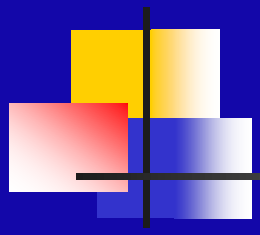
- ***Moderately ↑Risk (MIR)***
  = ↑Risk 4-5 Times

- **Atypical ductal hyperplasia**
- **Atypical lobular hyperplasia**

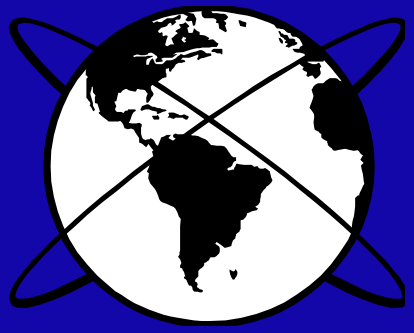
Jamaican Breast Disease Study 2000-2

Biopsy Results (46.1% patients)





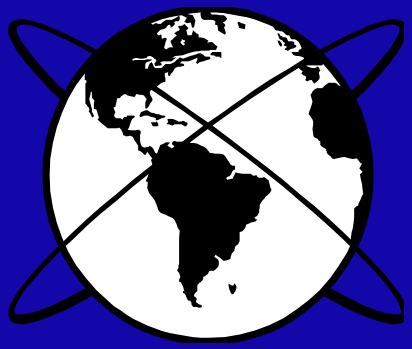
CARCINOMA OF THE BREAST



EPIDEMIOLOGY

Commonest malignancy in women worldwide:

- ***Breast cancer 18%***
- ***Cervical cancer 15%***
- ***Colonic cancer 9%***
- ***Stomach cancer 8%***



EPIDEMIOLOGY

- **Incidence rates are highest in North America, Australia and Western Europe; intermediate in South America, the Caribbean and Eastern Europe and lowest in China, Japan and India**
- ***Most common invasive tumour of Jamaican women***

RISK FACTORS

Age

- Incidence of breast cancer ↑ses with age
- Uncommon before age 25 years; incidence ↑ses to the time of menopause and then slows

RISK FACTORS

Family History

- **Approx 10% of breast cancer is due to inherited genetic predisposition**
- **A woman whose mother or sister has had breast cancer is at ↑relative risk 2 to 3 times compared to other women**

RISK FACTORS

- ***Family History***

- **At least two genes that predispose to breast cancer have been identified—*BRCA 1* and *BRCA 2***
- **Mutations in these tumour-suppressor genes also predispose affected women to ovarian cancer**

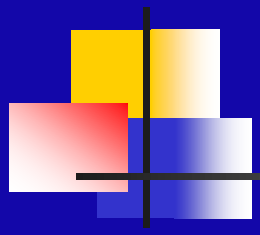
RISK FACTORS

- ***Benign Breast Disease***
  - **Certain types of benign breast disease**

- ***History of Other Cancer***
  - **A history of cancer in the other breast or a history of ovarian or endometrial cancer**

RISK FACTORS

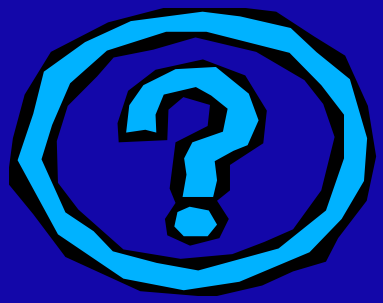
- ***Hormonal Factors***
  - **↑ levels of estrogen ↑risk:**
    - ***Early age at menarche***
    - ***Late age at menopause***
    - ***Nulliparity***
    - ***Late age at first child-birth***
    - ***Obesity***



RISK FACTORS

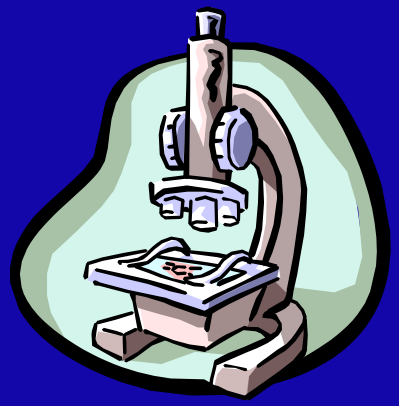
- ***Environmental Factors***

- ***High fat intake***
- ***Excess alcohol consumption***
- ***Ionizing radiation***



ETIOLOGY

- ***The etiology of breast cancer in most women is unknown***
- ***Most likely due to a combination of risk factors i.e. genetic, hormonal and environmental factors***



HISTOLOGIC CLASSIFICATION

Breast Cancer

↙ ↘

Ductal — Lobular

↙ ↘ ↙ ↘

DCIS (*15%*) **IDC** (*75%*) **LCIS** (*5%*) **ILC** (*5%*)

Ductal Carcinoma In-situ

- ↑sed incidence with ↑sed use of mammographic screening and early cancer detection
- 50% screen-detected cancers
- Can also produce palpable mass

Ductal Carcinoma In-situ

- Characterized by proliferating malignant cells within ducts that do not breach the basement membrane
- Different patterns e.g. *comedo* (central necrosis*); cribiform* (cells arranged around "punched-out" spaces); *papillary* and *solid* (cells fill spaces)

Ductal Carcinoma In-situ

- Different grades i.e. low, intermediate and high grade—comedo DCIS is classically high grade
- Often *multifocal*—malignant population can spread widely through the duct system

Ductal Carcinoma In-situ

- **Women with DCIS are at risk of:**
  - **Recurrent DCIS following Rx**
  - **Invasive cancer (rel. risk 8 to 10 times) especially in the same breast**

Lobular Carcinoma In-situ

- Relatively uncommon lesion
- Malignant proliferation of small, uniform epithelial cells within the lobules
- Also at marked ↑sed relative risk for invasive cancer (8 to 10 times) in either breast

Invasive Ductal Carcinoma

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

Invasive Ductal Carcinoma

- ***Clinical presentation:***

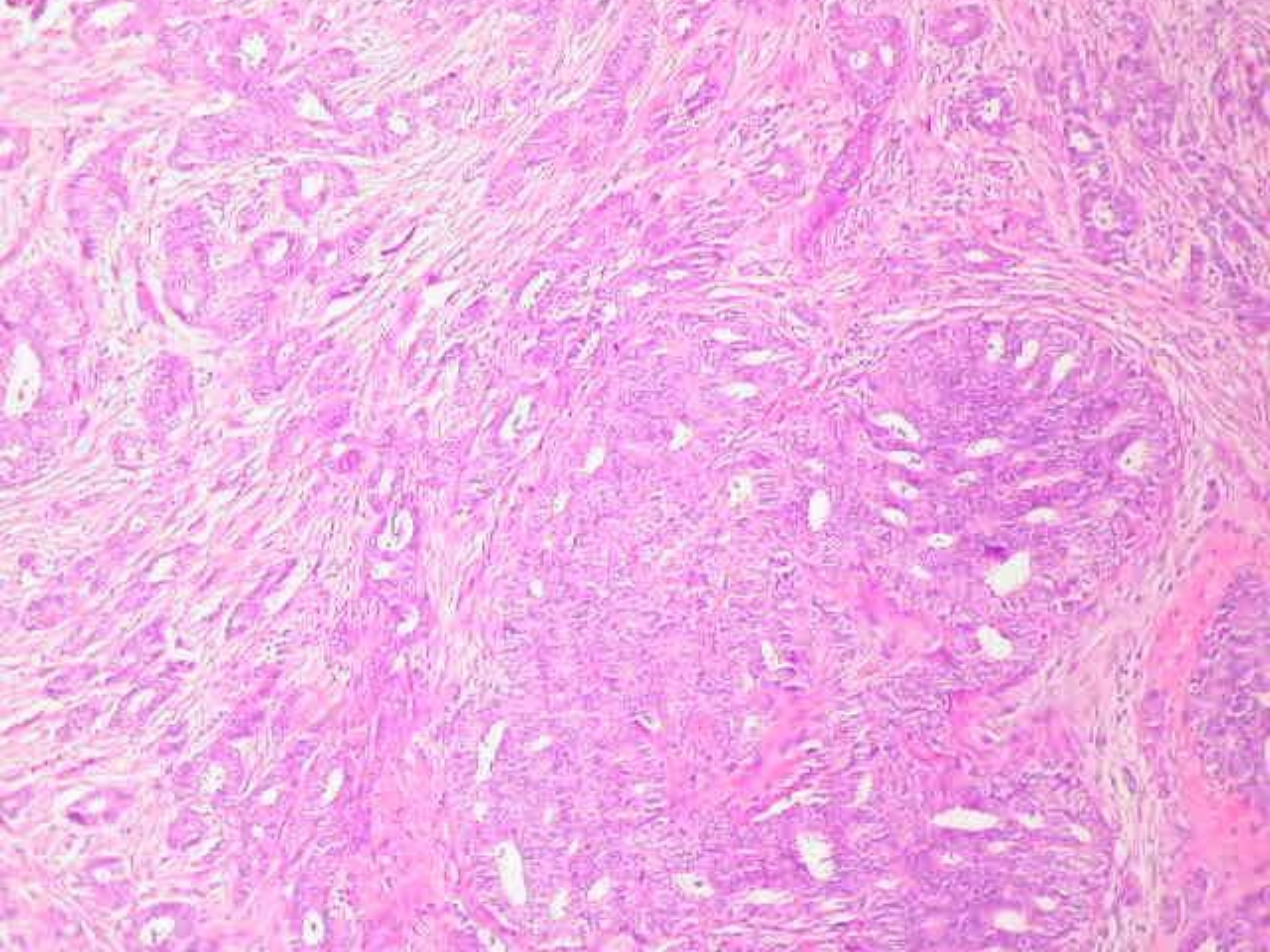
- **Hard, irregular palpable lump**
- ***Peau d'orange*** **(lymphatic obstruction and thickening/dimpling of the skin)**
- ***Paget's disease of the nipple*** **(ulceration/inflammation due to intraductal spread to the nipple)**

Invasive Ductal Carcinoma

- ***Clinical presentation:***
  - **Tethering of the skin**
  - **Retraction of the nipple**
  - **Axillary mass (spread to regional lymph nodes)**
  - **Distant mets (lung, brain, bone)**

Invasive Ductal Carcinoma

- Different histologic types exist
- The most common is *scirrhous carcinoma* (IDC of no special type)
- This type is characterized grossly by an irregular, hard mass
- Histology shows infiltrating clusters of malignant cells in a dense, fibrous stroma



Invasive Ductal Carcinoma

- ***Special histologic types of IDC:***

- ***Medullary carcinoma*** **= circumscribed tumour; sheets of malignant cells in dense lymphoid stroma**
- ***Tubular carcinoma*** **= infiltrating tubular structures on histology**

Invasive Ductal Carcinoma

- ***Special histologic types of IDC:***

- ***Mucinous/colloid carcinoma*** **= malignant cells in pools of mucin**

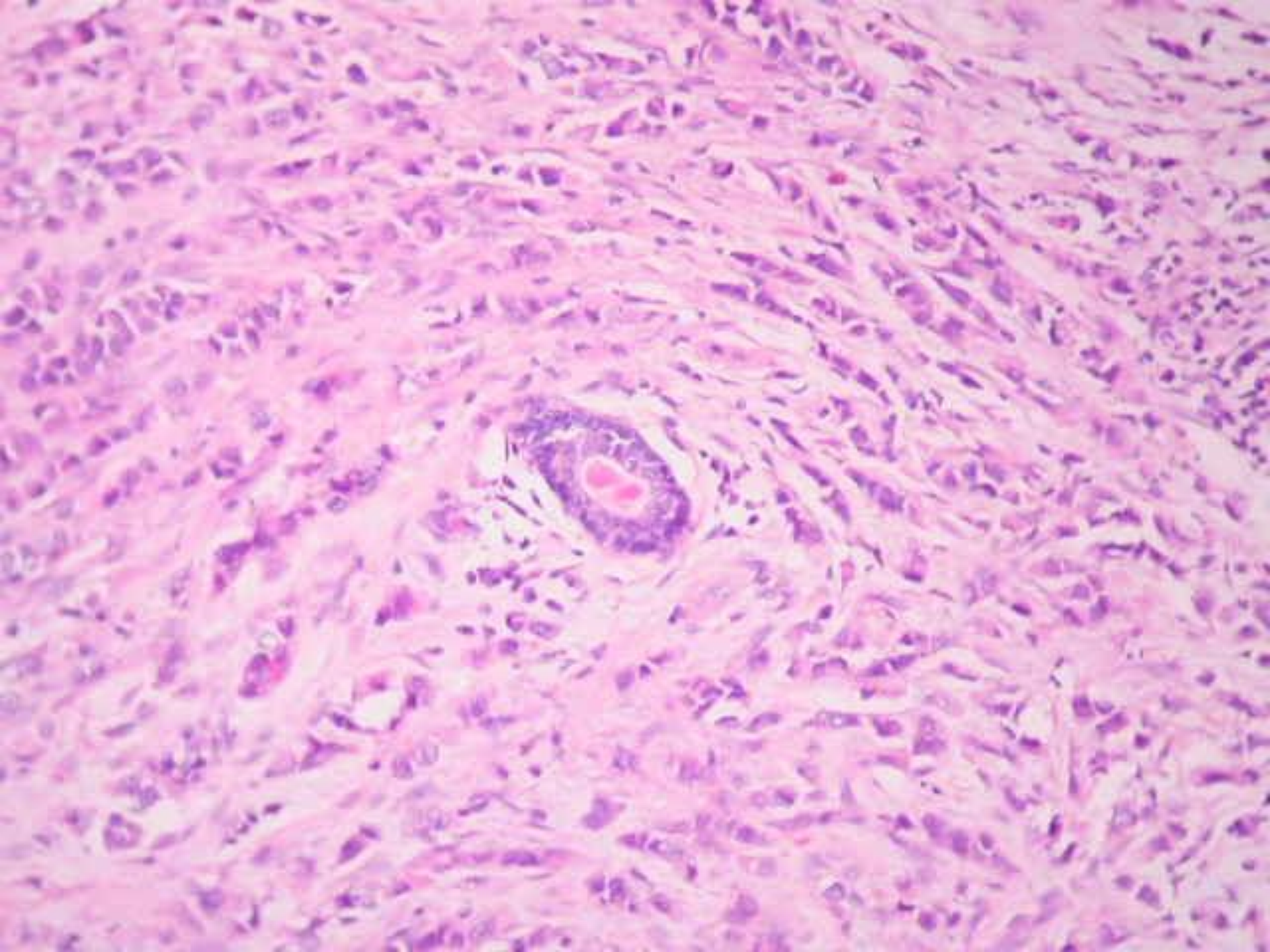
- ***Papillary carcinoma*** **= papillary formations like papilloma + invasion**

Invasive Lobular Carcinoma

- Much less common than IDC
- Can present with similar features
- More likely to be *bilateral* and/or *multicentric* (multiple lesions within the same breast)

Invasive Lobular Carcinoma

- Classic histology = small, uniform cells arranged as:
  - Strands/columns within a fibrous stroma ("Indian-file")
  - Around uninvolved ducts ("bull's-eye" pattern)
- Metastasize more frequently to CSF, serosal surfaces and pelvic organs



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 neg disease is 80% vs 35% for tumours with positive nodes**

PROGNOSIS

- ***Tumour Grade***
  - **Different grading systems exist**
  - **↑tumour grade = worse prognosis**
- ***Histologic Subtypes***

PROGNOSIS

- ***Hormone Receptors***
  - **Estrogen receptors**
  - **Progesterone receptors**
- ***Molecular Markers***
  - **Inc. c-erb-B2, c-myc and p53**

TREATMENT OPTIONS

- **Surgery**
  - ***MRM***
  - ***Breast conservation***
  - ***+/- Axillary dissection***
- **Radiation therapy (local control)**
- **Chemotherapy (systemic control)**
- **Hormonal Rx (systemic control)**

PHYLLODES TUMOUR

- Stromal tumour arising from the intralobular stroma
- Range in size from a few cm to massive lesions
- Classically have a “leaf-like” configuration

PHYLLODES TUMOUR

- Most are low-grade lesions that can recur locally but do not metastasize
- Others are of high-grade and exhibit aggressive clinical behaviour e.g. spread to distant sites (cystosarcoma phyllodes)

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)**

THE MALE BREAST

Gynecomastia

- 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*

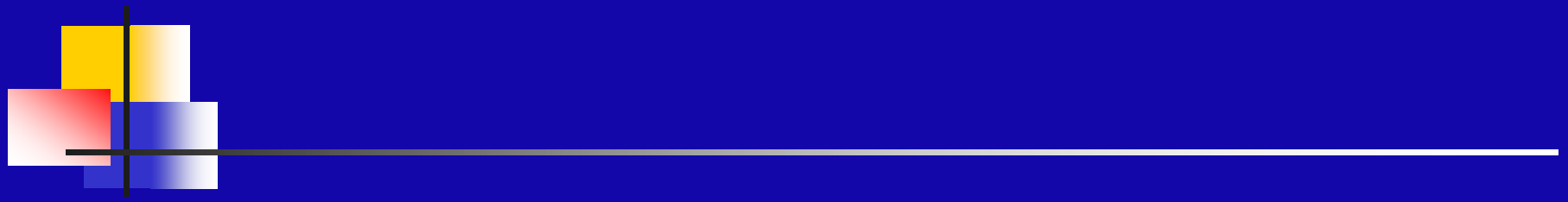
- Very rare occurrence; female cancer to male cancer ratio approx 100:1
- Pathology and behavior is similar to cancers seen in women although with less breast tissue, skin involvement is more frequent

Lecture Objectives Can you?

1. **Discuss the etiology/pathologic features of different forms of benign non-neoplastic and neoplastic breast disease.**
2. **List the benign breast diseases that increase a patient's risk of developing breast cancer and classify these conditions by the degree of risk.**

Lecture Objectives
Can you?

3. Outline other risk factors predisposing to breast cancer & incidence/prevalence of breast cancer.
4. Classify breast cancer into histologic subtypes and describe the pathologic features of each.
5. List the prognostic factors for breast cancer.



THANK YOU