LYMPHATIC DRAINAGE

AXILLARY (MOSTLY)

INTERNAL MAMMARY

SUPRACLAVICULAR
HISTOLOGY

- LOBE: (10 in whole breast)
- LOBULE: (many per lobe)
- ACINUS/I, aka ALVEOLUS/I: (many per lobule)
- DUCT(S): INTRA- or INTER-LOB(UL)AR, leading to the lactiferous ducts in the nipple
One single ACINUS (alveolus)

Epithelial cells

MYO-epithelial cells
THREE NORMAL PHASES

• ACTIVE: about 50-50 Gland/Stroma ratio

• LACTATING: Mostly Glands (like thyroid!!!), >>>>50/50

• ATROPHIC: mostly stroma, <<<<50/50
The most important thing to understand breast pathology is to get a solid IMAGE of the "NORMAL" breast lobule----ACINI, STROMA, BOUNDARIES
BREAST PATHOLOGY

• DEVELOPMENTAL:
• DEGENERATION:
• INFLAMMATION:

• NEOPLASM:
DEVELOPMENTAL

• MILKLINE REMNANTS
• ACCESSORY (axillary) BREAST TISSUE
• NIPPLE INVERSION
• MACROMASTIA
ACCESSORY
(axillary)
BREAST
TISSUE
1) CONGENITAL
2) ACQUIRED: CARCINOMA
3) ACQUIRED: PIERCING
DEGENERATION

• ATROPHY
INFLAMMATION

- ACUTE, staph most common
- PERIDUCTAL
- DUCT-ECTASIA
- FAT NECROSIS, usually trauma
- LYMPHOCYTIC, i.e., diabetic
- GRANULOMATOUS, sarcoid, TB, etc., but mostly idiopathic
ACUTE MASTITIS
PERIDUCTAL INFLAMMATION
Ductesia → CYSTS
RED COLUMNAR ➔
i.e. "APOCRINE"

CUBOIDAL ➔
COLUMNAR ➔
FAT NECROSIS
LYMPHOCYTIC MASTITIS  
(DIABETIC MASTOPATHY)
GRANULOMATOUS MASTITIS
NEOPLASIA

- Benign epithelial
- Benign stromal
- Premalignant
- Malignant epithelial (ductal, lobular) (adenocarcinomas) (in-situ, infiltrating)
- Malignant stromal
CLINICAL PRESENTATIONS

• MASS, palpable or mammographic
• NIPPLE DISCHARGE
• PAIN
NEOPLASIA

• BENIGN EPITHELIAL, aka, “FIBROCYSTIC” disease
  – NON-proliferative epithelium: i.e., cysts, fibrosis, adenosis
  – PROLIFERATIVE epithelium: hyperplasia, sclerosing adenosis, papilloma, fibroadenoma
  – ATYPICAL epithelium
CYST, GROSS

CYST, MICROSCOPIC
ADENOSIS ↑ acini/lobule
FIBROSIS + CYSTS = FIBROCYSTIC DISEASE
• **BENIGN EPITHELIAL**, aka, “**FIBROCYSTIC**” disease
  - **NON-proliferative** epithelium: i.e., cysts, fibrosis, adenosis
  - **PROLIFERATIVE** epithelium: hyperplasia, sclerosing adenosis, papilloma, fibroadenoma
  - **ATYPICAL** epithelium
DUCTAL HYPERPLASIA
“SCLEROSING” ADENOSIS
“COMPLEX” SCLEROSING ADENOSIS
(RADIAL SCAR)
“SCLEROSING” ADENOSIS
FIBROADENOMA:
1) EXTREMELY WELL DEFINED
2) YOUNGER WOMEN
3) ALWAYS BENIGN
4) CAN FIBROSE OR CALCIFY WITH AGE
PAPILLOMA
PAPILLOMA
PAPILLOMA
NEOPLASIA

• BENIGN EPITHELIAL, aka, “FIBROCYSTIC” disease
  – NON-proliferative epithelium: i.e., cysts, fibrosis, adenosis
  – PROLIFERATIVE epithelium: hyperplasia, sclerosing adenosis, papilloma, fibroadenoma
  – ATYPICAL epithelium
FEATURES OF “ATYPIA”

• LOSS OF STROMA BETWEEN ACINI
• “SWISS CHEESE” HYPERPLASIA*
• CRIBRIFORMING**
• CELLULAR PLEOMORPHISM
• CELLULAR HYPERCHROMASIA
• INCREASED/ABNORMAL MITOSES*
• “ROMAN” BRIDGES***
• NECROSIS*** (“COMEDO-carcinoma”)

* indicating a feature specific to lesions with potential malignancy
** indicating a feature specific to lesions with increased atypia
*** indicating a feature specific to lesions with severe atypia
NORMAL DUCT

ATYPICAL HYPERPLASIA of DUCT

NORMAL ACINUS

ATYPICAL HYPERPLASIA, LOBULE
DCIS, microcalcifications
DCIS, microcalcifications
DCIS, ROMAN BRIDGES
LcIS
LCIS

• Usually hangs around MANY MANY years before it infiltrates, in contrast to DCIS

• The BEST management may be judicious neglect, i.e., observation

• If it does infiltrate, however, it is at least as bad as DCIS infiltrating, or probably WORSE, showing “indian” files
BREAST CANCER RISK FACTORS

- Age
- Menarche Age, early menarche is a risk
- First Live Birth
- First-Degree Relatives with Breast Cancer
- Breast Biopsies
- Race (caucasian the highest)
- Estrogen Exposure, prolonged, early menarche, late menopause
- Radiation Exposure
- Carcinoma of the contralateral breast or endometrium
- Geographic Influence
- Diet (high fat diet is riskiest)
- Obesity
- Exercise
- Lack of breast feeding is a risk, Lack of prior pregnancy is a risk.
- Environmental Toxins
- Tobacco
- ABORTIONS?
BREAST CANCER PROGNOSTIC FACTORS

• **STAGING**, especially POS or NEG lymph nodes, TNM, etc.

• AGE

• **GENERAL HEALTH** and IMMUNITY
  • Histologic degree of differentiation, i.e., GRADING
  • ERA/(PRA)
  • Her2, aka Her2-Neu
STAGING, TNM, based on biologic behavior

- IN-SITU
- EARLY disruption of the basal lamina, i.e., basement membrane
- STROMAL infiltration
- LYMPHATIC vessels
- SENTINAL lymph node metastasis
- MORE lymph node metastases
- Adjacent structures, skin, i.e., “inflammatory”
- DISTANT, METASTASES, LIVER, BONE, LUNGS, BRAIN, EVERYWHERE
<table>
<thead>
<tr>
<th>Total Cancers</th>
<th>Per Cent</th>
</tr>
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<tbody>
<tr>
<td><strong>In Situ Carcinoma</strong></td>
<td><strong>15–30</strong></td>
</tr>
<tr>
<td>Ductal carcinoma in situ, DCIS</td>
<td>80</td>
</tr>
<tr>
<td>Lobular carcinoma in situ, LCIS</td>
<td>20</td>
</tr>
<tr>
<td><strong>Invasive Carcinoma</strong></td>
<td><strong>70–85</strong></td>
</tr>
<tr>
<td>No special type carcinoma (&quot;ductal&quot;)</td>
<td>79</td>
</tr>
<tr>
<td>Lobular carcinoma</td>
<td>10</td>
</tr>
<tr>
<td>Tubular/cribriform carcinoma</td>
<td>6</td>
</tr>
<tr>
<td>Mucinous (colloid) carcinoma</td>
<td>2</td>
</tr>
<tr>
<td>Medullary carcinoma</td>
<td>2</td>
</tr>
<tr>
<td>Papillary carcinoma</td>
<td>1</td>
</tr>
<tr>
<td>Metaplastic carcinoma, (Squamous)</td>
<td></td>
</tr>
</tbody>
</table>
HISTOLOGIC TIDBITS

- INFILTRATING DUCTAL
- INFILTRATING LOBULAR (INDIAN FILE)
- TUBULAR (LOOKS LIKE SCLEROSIS, BUT NO BASEMENT MEMBRANE)
- MUCINOUS (COLLOID)
- MEDULLARY (LOTS of LYMPHOCYTES)
INFILTRATING DUCTAL
INfiltrating Lobular Ca.,
“Indian” File Pattern
INfiltrating ductal CA., “Tubular” pattern or type
INFILTRATING DUCTAL CA.,
MUCINOUS (COLLOID) PATTERN or TYPE
INFILTRATING DUCTAL CA.,
MEDULLARY PATTERN or TYPE
NEOPLASIA, STROMAL

Cysto-"SARCOMA" PHYLLODES
(aka, PHYLLODES TUMOR), Looks like a giant fibroadenoma, really NOT a sarcoma

SARCOMAS, true, are RARE!!!!
MALE BREAST

• GYNECOMASTIA (related to hyperestrogenism)

• CARCINOMA (1% of ♀)
GYNECOMASTIA (NO lobules)