Definitions of cellular adaptations

- Atrophy is a decrease in size of cells
- Hyperplasia is an increased in number of cells
- Dysplasia is cells that vary in size and shape

Definitions of cellular adaptations

- Hypertrophy is an increase in the size of individual cells
- Metaplasia is when a mature cell type is replaced by a different cell type

Definitions of cellular adaptations

- Neoplasia is new growth and a neoplasm commonly called a tumor
- Anaplasia are cells that are undifferentiated and characteristic of cancer and is the basis for grading the aggressiveness of a tumor

What is undifferentiated?

- Cells are very immature and "primitive" and do not look like cells in the tissue from it arose

What are High Risk Lesions?

- Is pre-cancer such a word?
- High risk factor
- High risk lesions need to have special attention
- Surveillance
- Medications
- Preventative surgery
What are High Risk Lesions

- Hyperplasia with and without atypia
- Hyperplasia is defined as enlargement of tissue caused by an increase in the reproduction rate of the cells.
- In the breast, high risk lesions could be………..
- Atypical Ductal Hyperplasia
- Atypical Lobular Hyperplasia
- Flat Epithelial Hyperplasia with atypia
- Lobular carcinoma in situ
- Radial scar/complex sclerosing lesion
- Atypical columnar cell hyperplasia

Surveillance

- Breast surveillance requires shorter term imaging
- Usual management for surveillance is
- Mammography with 6 month follow up for the first two years, with ultrasound every other 6 months and possible MRI once a year.
- Make sure patient gets a clinical breast exam twice a year
- Make sure patient is conducting breast self examination

Medication/Drug control

Tamoxifen

- Prevention medicine for high risk lesions
- Tamoxifen approved by FDA in 1998
- Nolvadex (Pill) and soltamox (liquid) brand names
- Pill taken once a day
- Estrogen modulator to prevent breast cancer in women with high risk
- Estrogen receptor antagonist antineoplastic agent
- Women having periods and haven’t reached menopause yet
- Reduces the risk by 30-50 percent if taken for 5-10 years

Tamoxifen

- Selective Estrogen Regulator modulator (SERM)
- Selectively blocks or activates estrogen's action on specific cells.
- Sits in the estrogen receptors in the breast cells. If a SERM is in the estrogen receptor, there is no room for estrogen to attach to the cell, therefore the cell doesn’t receive estrogen's signals to grow and multiply.
- While tamoxifen blocks estrogen's action on the breast cells, it activates estrogen's action in bone and liver cells to help stop bone loss after menopause
- Lower cholesterol levels
### Tamoxifen

- Side effects:
  - Abnormal vaginal bleeding
  - Abnormal bleeding in the genital area
  - Leg swelling and/or tenderness
  - Chest pain/shortness of breath
  - Weakness, tingling, or numbness in the face, arm, and leg
  - Vision problems/dizziness and sudden severe headaches
  - Weight gain/mood swings/nausea/hot flashes/hair thinning
  - Loss of libido

### Evista

- Evista chemical name is Raloxifene approved by FDA in 1997
- A type of SERM
- Decreases low density lipoprotein (LDL) cholesterol.
- Unlike Raloxifene, evista does not increase high density lipoprotein (HDL)

### Fareston

- Fareston chemical name is toremifene approved by FDA in 1997
- A type of SERM

### Hormone Therapy

- ERDs (Estrogen Receptor Downregulators):
  - Faslodex (chemical name: fulvestrant)

- ERDs (Estrogen Receptor Downregulators):
  - Block the effects of estrogen in breast tissue. ERDs work in a similar way to SERMs. ERDs sit in the estrogen receptors in breast cells, so the cell doesn’t receive estrogen’s signals to grow and multiply.
  - ERDs also reduce the number of estrogen receptors and change the shape of the breast cell estrogen receptors, so they don’t work as well.
  - Unlike SERMs, ERDs don’t activate estrogen receptors in other parts of the body, such as the bones or the uterus. ERDs only block and destroy estrogen receptors.
- Hormone Therapy
  - ERD's Effects
  - Nausea
  - Vomiting
  - Hot flashes
  - Headache
  - Constipation
  - Diarrhea
  - Sore throat
  - Back/stomach/abdominal pain
  - Injection site pain

- Before there was medication to prevent the growth of tumors from hormones, doctors relied on the removal of the endocrine organs.
  - Oophorectomy: the removal of the ovaries.
  - Adrenalectomy: the removal of the adrenal glands.
  - Hypophysectomies: removal of the pituitary glands.

- Biologic Therapy
  - A drug treatment that helps the body's immune system fight cancer.

- Biologic Therapy
  - What does HER2/neu stand for?

- Biologic Therapy
  - Human Epidermal growth factor Receptor 2

- Biologic Therapy
  - HER2/neu are receptors on the cell membrane that when triggered, transport a signal to cause cell growth.

- Biologic Therapy
  - Who in the class wants to be HER2 Positive raise your hand?
Atypical Ductal Hyperplasia (ADH)

- Happens within the walls of the ducts in the breast
- ADH is a high risk lesion/calculifications
- Marker for increased risk for developing breast cancer
- 4-5 times higher risk added on to patients with first degree relative
- If found on a biopsy, and a large area of disease, a segmental mastectomy is recommended, if a small area, most are comfortable with 6 month follow up.
Atypical Lobular Hyperplasia (ALH)

- Abnormal appearing growth of cells within the lobules of the breast
- If found by a biopsy, management is controversial
- Most physicians feel comfortable moving forward to surgery to make sure there is nothing serious at the site of biopsy. Also anytime disease happens in the lobules, an ultrasound is recommended yearly with mammograms.
- Some physicians are comfortable with short term follow ups and some are comfortable with yearly follow ups.

Lobular Carcinoma In-Situ (LCIS)

- Lobular carcinoma in-situ is abnormal cell growth that increases a person’s risk of developing breast cancer in a lifetime.
- Usually more than one lobule is affected.
- High risk for developing breast cancer in a lifetime.
- Management is short term follow up with ultrasound 6 months for two years.
- If no change then patient can go back on annual screening.
- Usually found in women ages 40-50.

Flat Epithelial Hyperplasia with atypia

- This diagnosis co-exist with ALH/ALH and possible IDC or tubular carcinoma
- Most of these patients get an incisional surgical procedure to make sure no carcinoma is within the area around the biopsy.
- Lack of mammographic appearance, usually incidental on a biopsy
- If found on a biopsy, usually another biopsy with a larger core is considered or just go right to a surgical incision.
- Also called clinging carcinoma monomorphic type.
Atypical Columnar Cell Hyperplasia

- Also called blunt duct adenosis and columnar alterations.
- Wide range of histologic changes.
- May represent early morphologically identifiable low grade carcinoma
- Most cases are just an annual following with mammograms.
- If a large area is seen, possible short term follow up.

Radial Scar

- Form of Complex sclerosing hyperplasia lesion.
- Characteristics are translucent, circular, or oval region in the center.
- Fat is usually centered around this area.
- Between stromal structures of the breast.
- Just a moderate increase risk for breast cancer development over a lifetime.
- Most are hard to see on an ultrasound, better seen mammographically
- Management is usually surgical incision.

Path for high risk pathology

BREAST, LEFT, STEREOTACTIC GUIDED CORE BIOPSY AT 4 O’CLOCK, 9 CM FROM NIPPLE:
Columnar cell change with single focus of borderline flat epithelial atypia.
Ductal hyperplasia, focally florid.
Lymphohistiocytic inflammation suggestive of prior cyst rupture.
Microcalcification identified in single lobular unit.
See Comment.

(B) BREAST, LEFT, STEREOTACTIC GUIDED CORE BIOPSY AT 2 O’CLOCK, 10 CM FROM NIPPLE:
Columnar cell change with hyperplasia, negative for atypia.
Ductal hyperplasia, focally florid.
Apocrine metaplasia.
Microcalcifications not identified.
See Comment.
We get a little crazy working in this type of job....