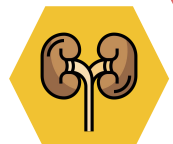
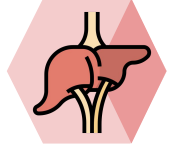


Common Solid Tumors



Objectives :

1. Pathological classification and staging of solid tumors
2. Common solid tumors worldwide and in Saudi Arabia
3. Study of Two common solid tumors: **breast cancer** and **colorectal cancer** regarding:
 - Risk factors
 - Clinical presentation
 - Early detection
 - Diagnostic tools
 - Broad lines of management
 - Prevention.

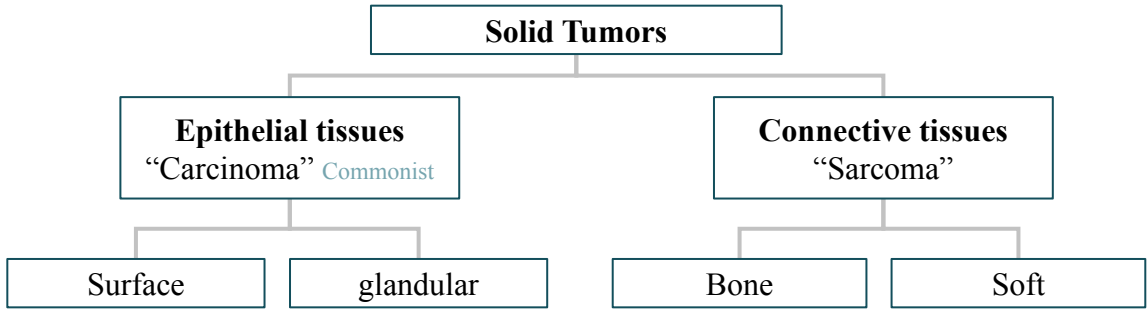
Done by :

Team Leader: AlHanouf AlJaloud
Revised by: Yazeed Al-Dossare

Resources :

Doctors Slides + Notes: Prof Ahmed Abd El-Warith
Books: Step up, Kumar, Kaplan
Teams: 436

Classification Of Solid Tumors:



Cancers are classified by **the type of cell** that the tumor cells presumed to be the origin of the tumor. These types include:

Carcinoma: Cancers derived from **epithelial cells**. This group includes many of the most common cancers, **breast, prostate, lung, pancreas, and colon**.

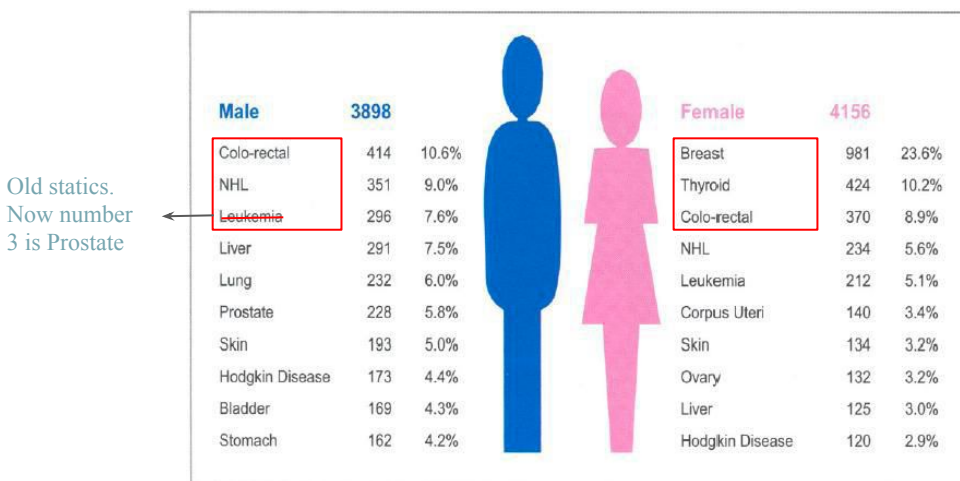
Sarcoma: Cancers arising from **connective tissue** (i.e. **bone, cartilage, fat, nerve**), each of which develop from cells originating in mesenchymal cells outside the bone marrow.

Germ cell tumor: Cancers derived from **pluripotent** cells, most often presenting in the **testicle** or the **ovary** (seminoma and dysgerminoma, respectively).

Blastoma: Cancers derived from immature "precursor" cells or **embryonic tissue**. These are also most common in **children**. blastoma as a suffix, with the Latin or Greek word for the **organ** or tissue of origin as the root. hepatoblastoma.

Some types of cancer are named for the size and shape of the cells under a microscope, such as **giant cell carcinoma, spindle cell carcinoma, and small cell carcinoma**.

Cancer statistics in KSA



In the USA
#1 Men: Prostate
#1 Women: Breast

Old statics.
Now number
3 is Prostate

Figure 2.3 Ten Most Common Cancers among Saudis by Sex, 2006

Common Solid Tumors

In the U.S the three most common cancers:

- **Men:**
 - Prostate
 - Lung
 - Colorectal
- **Women:**
 - Breast
 - Colorectal
 - Lung

In the KSA the three most common cancers:

- **Men:**
 - Colorectal
 - Lymphoma
 - Leukemia now its prostate.
- **Women:**
 - Breast
 - Thyroid
 - Colorectal.

General principles of solid tumor treatments "According to stage":

Early	Locally Advanced	Metastatic
Local +/- Systemic to prevent chance of metastasis	Local & Systemic	Systemic +/- Local for palliation

Study of Solid tumors:

- Epidemiology
- Aetiology
- Pathology
- Clinical presentation
- Staging
- Management
- prognosis

A Simple Equation

- LATE PRESENTATION + ADVANCED STAGE
 - = POOR OUTCOME
- EARLY PRESENTATION + EARLY STAGE
 - = GOOD OUTCOME

Breast Cancer:

Facts:

- 2nd most common cancer. Worldwide After lung
- 1st most common cancer in females. F:M ratio 100:1
- 2nd leading cause of death. Because it's common not because its deadly.

Risk factors:

- History of breast cancer in the same patient
- Family history of breast cancer, especially in first-degree relatives
- Benign breast diseases / atypical hyperplasia
- Early menarche, late menopause prolonged exposure to estrogen stimulates cell proliferation increasing the chance of mutations
- Late first pregnancy/no pregnancy
- Exogenous estrogens
- Radiation (HD radiation for hodgkin's disease)
- BRCA1 & BRCA2 mutations (Associated with early onset)



A Good Breast Health Plan

- Mammograms
 - Mammogram screening should start at the age of 40 every 2 years
- Self Awareness (Monthly Self Exams) (BSE)



Suspecting Breast Cancer Is one of the most important steps in diagnosing Early Breast cancer

- Why?
- When?
- What?
- Which?

Many good reasons to suspect breast cancer. Remember that Breast cancer is:

- Most common cancer in females.
- Wide age range 20 - +70y.
- Breast cancer can occur during pregnancy ,during lactation.
- Breast cancer can occur in pre, peri and post menopausal females

Warning signs and symptoms:

- Painless lump or thickening of the skin (can be painful especially if infected)
- Thickening or swelling that persist
- Nipple pain or retraction
- Nipple discharge
- Breast skin irritation or dimpling

Breast Cancer cont:

What To do If you Suspect Breast Cancer?

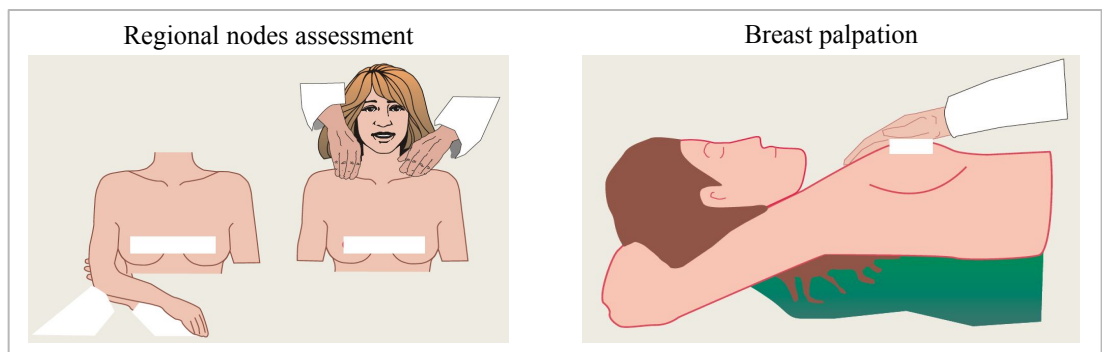
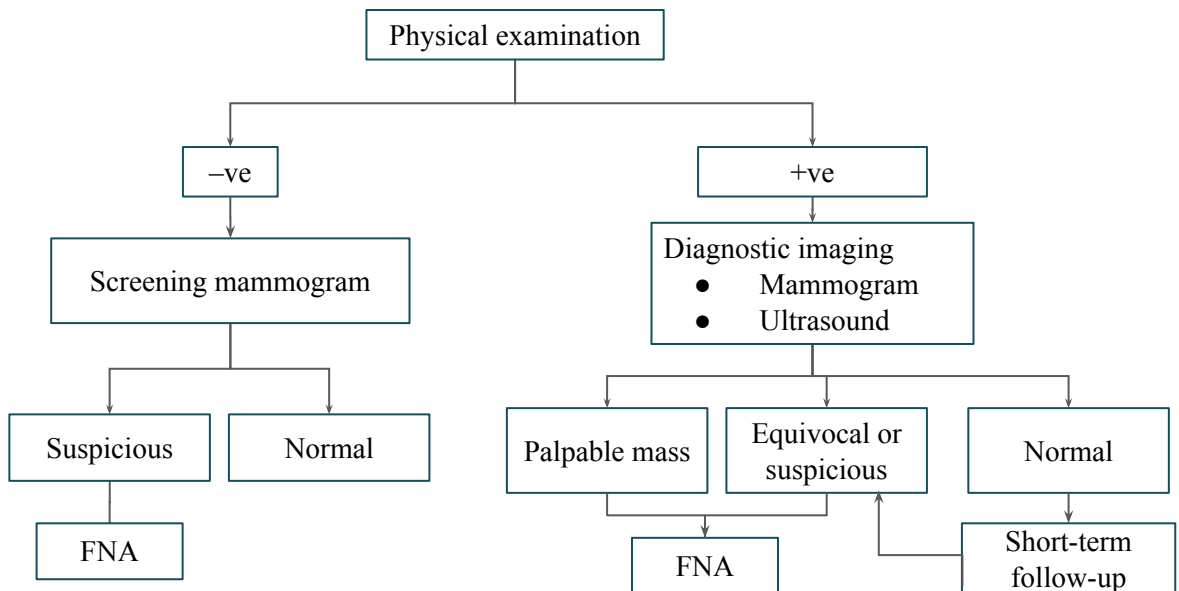
- **Do not just reassure the patient**
- Do not give hormonal therapy like tamoxifen and raloxifene it will shrink the tumor for a while but it will not cure it
- Do not give antibiotics. If breast abscess is suspected you can give antibiotics but you have to follow up
- Take Careful history and Careful physical examination
- Perform Bilateral mammogram, breast US if young <30 we do ultrasound if she's above 40 we do mammogram., +/- Fine needle aspiration

To improve patients Prognosis

1. Early diagnosis
2. Early and proper intervention

Diagnostic Tests

- Fine needle aspiration (FNA): The best initial biopsy. can differentiate between benign and malignant.
- Core needle biopsy: can test for ER, PR, HER2/neu for recepture status
- Open biopsy: The "most accurate diagnostic test" and allows for **immediate resection**



Breast Cancer cont:

Therapy:




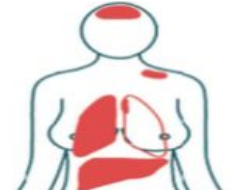
Local therapy: Surgery, Radiotherapy

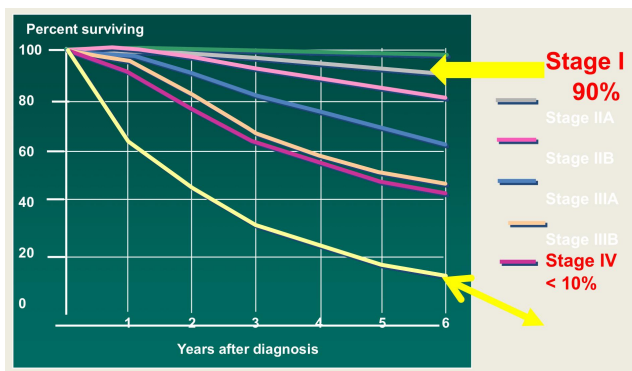
Systemic therapy: Chemotherapy, Hormonal therapy, Biological therapy

- **Hormonal therapy**

- All ER or PR positive patients should receive tamoxifen, raloxifene, or one of the aromatase inhibitors (anastrozole, letrozole, exemestane)
 - Aromatase inhibitors
 - Gives osteoporosis
 - Generally for postmenopausal women.
 - Tamoxifen
 - Gives endometrial cancer and clots
 - Better in premenopausal patients.
- All Her 2/neu +ve should receive trastuzumab.
 - Trastuzumab decreases the risk of recurrent disease and increase survival.

Staging:

Stage I (Early disease) more than 90% can be cured Stage	II (Early disease)	Stage III (Locally advanced)	Stage IV (Advanced disease) less than 10% can be cured
Confined to the breast. (node-negative)	Spread to movable ipsilateral axillary node(s) (node-positive)	Spread to the superficial structures of the chest wall; involvement of ipsilateral internal mammary lymph nodes.	Metastases present at distant sites such as bone, liver, lungs and brain and including supraclavicular lymph node involvement.
			

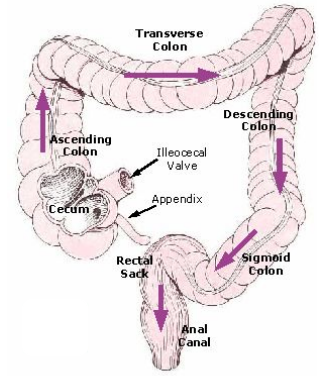


Survival by stage: Old percentages now survival is much higher with advanced medicine

Colon Cancer:

What is the Colon

- The Colon is a long, coiled, tubular digestive tract.
- It basically acts as a waste processor
 - Takes digested food in the form of Solid waste pushing it out of the rectum and anus
- The **Colorectal** tube is a prime location for the development and growth of small polyps or tumors



Risk factors:

- **Older age.**
 - About 90 percent of people diagnosed with colon cancer are **older than 50**.
Patient should start screening after 50
 - Can occur in any age, but it occurs much less frequently if < 45 years of age.
- A **personal history** of colorectal cancer or polyps.
 - If a patient **already had colon cancer** or adenomatous **polyps** (even though it is noncancerous, **It's a premalignant lesion but may not develop to cancer**), there is a greater risk of colon cancer in the future.
- **Inflammatory intestinal conditions.**
 - **Ulcerative colitis** and Crohn's disease, can increase a patient's risk of colon cancer. **Start screening for CRC after 8 years from IBD diagnosis**
- **Inherited syndromes** that increase colon cancer risk..
 - **Familial adenomatous polyposis** and **hereditary nonpolyposis** colorectal cancer, which is also known as **Lynch syndrome**.
- **Family history** of colon cancer and colon polyps.
 - Patients are more likely to develop colon cancer if they have a A blood relative with Colon Cancer especially a parent, sibling or child with the disease.
 - If more than one family member has colon cancer or rectal cancer, their risk is even greater.
- **Low-fiber, high-fat diet.**
- **A sedentary lifestyle.**
- **Diabetes.** Insulin resistance may have an increased risk of colon cancer.
- **Obesity.**
- **Smoking:** People who smoke cigarettes may have an increased risk of colon cancer.
- **Alcohol:** Heavy use of alcohol may increase risk of colon cancer.
- **Radiation** therapy for cancer
- **History of** some other type of **Cancer**
- **Chronic constipation**

Colon Cancer cont:

Colon; The Cancer Itself

- It starts with a simple cell that mutates and grows into a **polyps** all colon cancers start as polyps (adenoma) > adenoma hyperplasia > mutation > full cancer
- If a polyp is allowed to remain in the colon it can grow into a cancerous tumor that can invade other organs.
- Colon cancer is the second leading cause of cancer deaths

Symptoms of Colon Cancer:

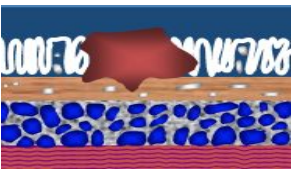
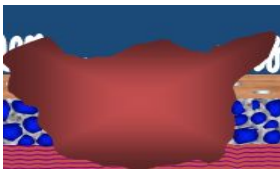

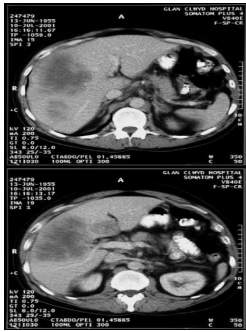
- A **change in bowel habits**, including diarrhea or constipation or a change in the consistency of stool
- **Rectal bleeding** or blood in stool
- Persistent **abdominal discomfort**, such as cramps, gas or **pain** abdominal pain is the most common presenting symptom
- A feeling of bowel not emptying completely
- Unexplained Weakness or **fatigue**
- Unexplained **weight loss**
- **Unexplained iron deficiency anemia**
- Based on the location of the lesion:
 - **Right sided:**
 - Obstruction is unusual because of the larger luminal diameter.
 - Anemia (Iron deficiency)
 - Change in bowel habits is less likely
 - Occult blood in stool, **Melena** is more likely
 - **Triad of Anemia, Weakness, RLQ mass**
 - **Left sided:**
 - Smaller lumen so **obstruction** is more common (CRC is the most common cause of bowel obstruction in adults)
 - Change in bowel habits is more likely “**pencil like stool**”
 - **Hematochezia** is more common
 - Rectal cancer
 - Hematochezia—most common symptom, tenesmus. rectal mass; feeling of incomplete evacuation of stool due to mass.

Carcinoembryonic antigen (CEA) is useful in CRC for:

- Establishing baseline
- monitoring treatment efficacy
- **Recurrence surveillance.**
- CEA have a prognostic significance:
 - Patients with preoperative CEA >5 ng/mL have a worse prognosis.

Colon Cancer cont:

Colon cancer staging:

I	II	III	IV
Confined To wall	Beyond the wall	Nodal involvement	Metastases Liver is the most common site of distant spread
			
Overall survival			
90%	60-80%	30-60%	< 5%

Early Detection:

Why does this contribute to a better survival?

- Early detection = Early stage = Better survival

By:

- **Colonoscopy**
 - Most sensitive test **Both diagnostic and therapeutic**
 - Colonoscopy **screening** every 10 years at age 50 for average risk individuals; and at age 40 if first degree relative with CRC or 10 years before the age of diagnosis of the relative (whichever first)
- Better imaging
- Better public and physician awareness.

More cases are diagnosed at earlier stage of disease.

Management:

- **Surgery is the only curative treatment of CRC** radiation is NOT indicated for colon cancer
- Follow-up is important after surgery.
 - Annual CT scan of abdomen/pelvis and CXR for up to 5 years
 - Colonoscopy at 1 year and then every 3 years
 - CEA levels every 3 to 6 months
 - A subsequent **increase in CEA is a sensitive marker of recurrence**
 - **Very high** elevations of CEA suggest **liver involvement**
- About 90% of recurrences occur within 3 years after surgery

Can we prevent Breast or Colon cancer?

Different Strategies for Cancer Prevention

1. Passive Prevention

- Discover Etiological factors Avoid these factors
 - eg. Smoking, Asbestos
- Avoid Breast cancer risk factors
 - Weight Gain as an adult /obesity
 - Estrogen & Progestin use
 - Alcohol use
 - +ve BRCA ↑ risk of breast cancer:
 - Either bilateral mastectomy or intensive follow up (every 6 months with MRI, US, Mammo)
- General health maintenance
 - Eat a healthy diet
 - Don't smoke
 - Don't drink too much
 - Exercise/ maintain optimal weight

Not an easy task, Social change is difficult and takes a long time and it is not good enough In high risk people

2. Active prevention

- Discover Pre-malignant lesions by screening Get rid of them before developing invasive cancer
 - Colonic polyps & DCIS
- Eliminate or prevent pre-invasive disease before invasion develops
 - Chemoprevention
 - Surgery

Summary:

Common Solid tumors In Saudi Arabia: Colorectal in men, Breast in women.		
	Breast Cancer	Colon Cancer
Risk Factors:	<ul style="list-style-type: none"> • History of breast cancer • Family history • Excess estrogens • Radiation • BRCA1 & BRCA2 	<ul style="list-style-type: none"> • Age >50 • Family history • Personal history of CRC • IBD • Inherited syndromes
Symptoms:	<ul style="list-style-type: none"> • Painless lump • Thickening or swelling that persist • Nipple pain or retraction • Nipple discharge • Breast skin irritation or dimpling 	<ul style="list-style-type: none"> • Change in bowel habits • Rectal bleeding or blood in stool • Persistent abdominal cramps, gas or pain • A feeling of bowel not emptying completely • Unexplained Weakness or fatigue • Unexplained weight loss • Unexplained iron deficiency anemia
Screening	Mammogram screening should start at the age of 40 every 2 years	Colonoscopy screening every 10 years at age 50 for average risk individuals; and at age 40 if first degree relative with CRC or 10 years before the age of diagnosis of the relative (whichever first)
Diagnosis	Biopsy	Colonoscopy
Management	Local therapy: Surgery, Radiotherapy Systemic therapy: Chemotherapy, Hormonal therapy, Biological therapy	Surgery is the only curative treatment of CRC
prevention	<ul style="list-style-type: none"> • Passive: Preventing risk factors • Active: Screening of premalignant lesions 	

Questions:

1. A woman finds a hard, nontender breast mass on self-examination. There is no alteration of the mass with menstruation. She is scheduled to undergo a FNA biopsy. Which of the following is most likely to benefit the patient?
 - A. Mammography.
 - B. BRCA testing.
 - C. Ultrasound.
 - D. PET scan.

Answer: A

2. 1) A 29-year-old woman comes to the physician after discovering a mass on breast self-examination. Her last menstrual period was 2 weeks ago. She reports occasional bilateral gray nipple discharge that has not changed since menarche. Examination reveals a 1.5-cm fluctuant mass in the upper and outer quadrant of the left breast. Which of the following is the best next step in management?
 - A. Reassurance and continued breast self-examination.
 - B. Mammography.
 - C. Open biopsy.
 - D. Fine-needle aspiration.

Answer: D

Answer B is incorrect. Mammography is not likely to be helpful in this case. Breast ultrasound is the best option to evaluate a breast mass in a woman <30 years old.

3. 44 years old woman came to the clinic complaining about a mass in her left breast, after examination of the breast there was no clinical finding (the breast is normal). What should you do?
 - A. Reassure the patient and give a follow-up appointment after one year
 - B. Ultrasound and mammogram
 - C. Blood test
 - D. Do genetic study braca

Answer: B

4. Patient was diagnosed with colon cancer, additional tests for staging is performed and many nodal involvement was found. What stage is the patient?
 - A. I
 - B. II
 - C. III
 - D. IV

Answer: D

5. 36 years old pregnant female in her 6 months of pregnancy came to the clinic complaining of right nipple retraction. Breast examination revealed normal breast, no masses and no lymph nodes enlargement, except retraction of right nipple. What is your appropriate next step?
 - A. Biopsy from right nipple
 - B. Perform ultrasound of breast immediately
 - C. Perform mammogram and ultrasound of breast after delivery
 - D. Reassure and close follow up

Answer: B