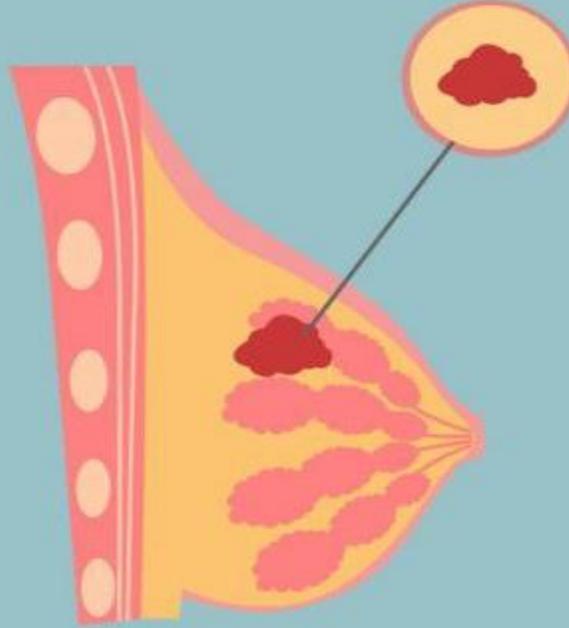


Edited past paper



By
Rama AlDaqqa
Hala Ajlouni

**Special thanks to:
Doctor 018,019,020
Dr Ahmad Alhaj**

1)The presence of which marker is a significant poor prognostic variable for patients with breast cancer:

- A. CEAB.
- B. C-erb B-2 (HER2)
- C. AFP
- D. Human chorionic gonadotropin (hCG)
- E. RB-1

Ans: B

- Patients selection: If ER+: endocrine therapy. If HER2+: trastuzumab. If node + or high risk: chemotherapy.

↳ good ↳ Bad

2) Regarding phylloids tumor all of the followings are true EXCEPT:

- A. 90% are malignant.
- B. One out of five are associated with Fibroadenomas.
- C. Treatment by wide excision or mastectomy.
- D. Axillary lymph nodes rarely involved.
- E. They are usually unifocal in the breast

Ans: A

Correct: 25% are malignant

2- Phylloides tumor

Definition & Epidemiology

Rare fibroepithelial tumor with histology similar to that of fibroadenoma. It is of unknown etiology with peak incidence of 40-50 years and comprise 1% of all breast tumor. It is most commonly a benign tumor. However, 25% are malignant.

Clinical features

- Painless, smooth, multilobular lump in the breast.
- Variable growth rate: may grow slowly over many years, rapidly, or have a biphasic growth pattern.
- Average size 4-7 cm.

Diagnosis

- Ultrasound and mammogram findings are similar to fibroadenoma, but **phylloides** tumors tend to be larger and grow faster than fibroadenomas.
- Despite the fact that the lesion is typically benign, a suspected **phylloides** tumor should be considered a suspicious mass until proven otherwise.
- If a **phylloides** tumor is suspected (based on clinical or imaging findings) → **core biopsy**.
 - Biopsy: **leaf-like architecture** with papillary projection of epithelium-lobular stroma and varying degree of atypia and hyperplasia.
- If a core biopsy is negative, but the mass continues to grow rapidly, an **excisional biopsy** should be performed.

Treatment

- Surgical excision.
- In case of recurrence, total mastectomy.

Prognosis

- After excision of benign tumors, excellent prognosis.
- Lesions that show signs of malignancy on histology may recur and metastasize.

3) Features of breast cancer which are associated with locally advanced disease include all of the following EXCEPT:

- A. Edema of the skin of the breast.
- B. Skin ulceration
- C. Arm edema
- D. Dermal lymphatic invasion
- E. Nipple retraction

Ans: E

E. Nipple retraction

Explanation:

Locally advanced breast cancer (LABC) is characterized by features such as **skin edema (peau d'orange), skin ulceration, arm edema (suggesting lymphatic obstruction), and dermal lymphatic invasion**—all of which indicate significant local spread.

• **Nipple retraction** can be seen in early-stage breast cancer due to fibrosis and is not necessarily a feature of **locally advanced disease**. It can occur in smaller, non-advanced tumors as well.

Thus, the **EXCEPTION** in the given list is **nipple retraction**.

4) Factors predisposing to the development of breast cancer in women include all of the following EXCEPT:

- A. a maternal history of breast cancer
- B. Early first pregnancy
- C. atypical hyperplasia of the breast
- D. increasing age beyond 50 years
- E. previous mastectomy for cancer

Ans: B

Correct: late first pregnancy

Invasive breast cancer: بأقلية يقدّر الرجز الإشعاعي بعد الولادة

- Most common cancer in women and second most common cause of cancer death in women. 10% has genetic cause.

Risk factors:

- 1 - Women are 100x at higher risk than men.
- 2 - Age
- 3 - Ethnicity: white > black > other.
- 4 - Previous history of breast cancer: 10-20% risk in contralateral breast.
- 5 - Alcohol, smoking, high-fat diet.
- 6 - Increased hormone exposure: early menarche (<12), late menopause (>55), OCPs, nulliparity, late first pregnancy (>30), exogenous hormones.
- 7 - Family history: seen in 15-20%. >2 first degree, especially if premenopausal.
- 8 - Genetic: BRCA1 or BRCA2 (DNA repair), ATM, Li Fraumeni, Cowden.

↓
Ataxia
telangiectasia

5) Breast carcinoma with the worst prognosis is:

- A. infiltrating ductal carcinoma
- B. medullary carcinoma
- C. mucinous (colloid) carcinoma
- D. papillary carcinoma
- E. tubular

Ans: A

Invasive (infiltrating) carcinomas	
Invasive ductal carcinoma (most common)	Invasive lobular carcinoma
70-80% of all invasive breast carcinomas, usually associated with DCIS.	10-15% of all invasive breast carcinomas, two-thirds of the cases are associated with LCIS.
Unilateral localization.	Unilateral or bilateral.
Mostly unifocal tumors.	Frequently multifocal.
More aggressive, early metastases.	Less aggressive, slower metastasis.
Forms duct-like structures.	Grows in a single-file pattern (No duct formation due to lack of E-cadherin). May exhibit signet-ring morphology.

Notes

- Most invasive ductal carcinomas produce a desmoplastic response, which replaces normal breast fat (resulting in a mammographic density) and eventually leads to the appearance of a hard, palpable irregular mass.
 - Clinically detected masses are usually 2 cm or greater.

6) In Duct ectasia all of the following are true EXCEPT:

- A. It often associated with both aerobic and anaerobic bacterial infection
- B. The incidence is reduced in smokers
- C. May present with a green or brown nipple discharge
- D. May present with nipple inversion
- E. Can be adequately treated with excision of the major ductal system

Ans: B

3- Mammary duct **ectasia** (plasma cell mastitis)

- Subareolar periductal chronic inflammatory condition defined by dilated mammary ducts which are eventually clogged. It is rare condition that affects multiparous postmenopausal women.
- Present as a peri areolar firm, painful mass with green-brown nipple discharge (most common cause for green discharge) and nipple retraction, mimicking the changes caused by some cancer. However, on biopsy it shows chronic inflammation with **plasma cells**.
- Most cases resolve spontaneously. May need to give antibiotics if it gets infected. Surgical excision for persistent lesions.

7) All of the following are considered carcinoma in situ, EXCEPT:

- A. Paget's disease of the nipple
- B. Basal cell carcinoma
- C. Hutchinson's freckle
- D. Bown's disease
- E. Erythroplasia of Queyrat

Ans: B

Basal cell carcinoma

Summary

Basal cell carcinoma (BCC) is a malignant neoplasm and the most common type of skin cancer. BCC primarily affects individuals with light skin. Although excessive sun exposure is the primary risk factor, chemicals (e.g., arsenic) and genetic factors also increase the risk of developing BCC. Slow-growing nodules (classic "pearly" appearance) that tend to ulcerate during the course of disease are the characteristic lesions associated with BCC. Surgical excision is the treatment of choice. Because BCC does not metastasize, the prognosis is usually excellent.

Erythroplasia of Queyrat (Bowen disease of the glans penis)

- **Definition:** squamous cell carcinoma in situ (SCCIS) of the penile mucosa
- **Etiology**
 - Chronic irritation or infection
 - Lack of circumcision
 - HPV types 16 and 18

Bowen disease

- **Definition:** squamous cell carcinoma in situ (SCCIS) of the skin
- **Etiology**
 - Exposure to sun
 - Often associated with human papillomavirus (HPV) types 16 and 18
 - May be related to arsenic exposure

8) Metastatic disease to the stomach can occur with the following tumors (Which one is the most common):

- A. Melanoma
- B. breast cancer
- C. Testicular cancer
- D. Colon cancer
- E. prostate cancer

Ans: B

^ Which cancers metastasize to stomach?

The most prevalent primary tumor spreading to the stomach is **breast cancer**, followed by renal cell cancer and many others. In general, gastric metastases occur in a late stage of malignant disease and frequently indicate short survival.

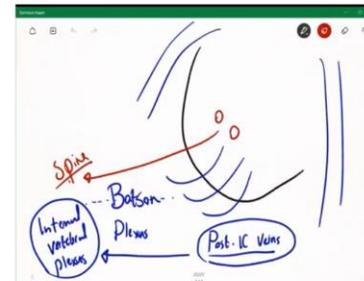
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9) A woman with breast cancer subsequently develops metastases in her vertebral column. The most direct route for spread of the tumor to the vertebral column was via:

- A. Branches of the cephalic vein
- B. branches of the lateral thoracic vein
- C. Branches of the thoracoacromial veins
- D. Lymphatic vessels draining into the axilla
- E. branches of the intercostal veins

Ans: E

⑤ thoracoacromial). Rest is supplied via posterior intercostals. The posterior intercostal veins connect the venous drainage of the breast to the internal vertebral venous plexus via Batson plexus.



10) Concerning the recurrence of breast cancer:

- A. The majority of patients recur within five years of diagnosis.
- B. More than 70% of breast cancer recurrences involve distant metastases.
- C. Pulmonary metastases are the most common initial site of distant recurrence.
- D. The local recurrence rate following breast-conserving procedures falls from 40% to 10% if postoperative radiation therapy is given to the entire breast.
- E. Recurrent disease will be seen in 15-20% of node-negative patients undergoing appropriate primary breast therapy.

Ans: C

- **Metastatic disease:** bone metastasis > liver metastasis > lung metastasis > brain metastasis
 - Bone metastasis: bone pain, pathologic fractures, abnormal laboratory results (↑ alkaline phosphatase, ↑ calcium).
 - Liver metastasis: abdominal pain, abdominal distention, nausea, jaundice, abnormal liver function test.
 - Lung metastasis: cough, hemoptysis, dyspnea, chest pain.
 - Brain metastasis: headaches, cognitive deficits, focal neurological deficits, seizures.

differentiate between
this Q and Q8

11) The optimum management of a T4 breast cancer is:

- A. modified radical mastectomy and radiation
- B. chemoradiation only
- C. Simple mastectomy and radiation
- D. Chemotherapy followed by mastectomy and radiation
- E. radiation therapy only

Ans: D

④ - Stages III (T4 or N3, M0): neoadjuvant chemo, then BCS with SLNB and/or ALND or modified radical mastectomy, then adjuvant chemo (if no neoadjuvant was given) and RT if BCS.

➤ Locally advanced disease

- Neoadjuvant systemic therapy + surgical resection (BCT or mastectomy) + axillary lymph node dissection
- Followed by adjuvant systemic therapy ± radiation therapy
- Primary chemotherapy (neoadjuvant) is being used for large but operable tumors that would traditionally require a mastectomy (and almost certainly postoperative adjuvant chemotherapy). The aim of this treatment is to reduce tumor volume to enable breast-conserving surgery to be performed. It is important that tumors have a metallic clip placed into them at the onset of therapy as otherwise there will be uncertainty about which area to resect once chemotherapy has been completed. In patients with breast cancer strongly positive for hormone receptors, a similar effect can be seen following 3 months of endocrine treatment

12) Regarding gynecomastia:

- A. If the disease is unilateral, it is unlikely drug-related
- B. Discontinuation of the offending drug always leads to resolution of the condition
- C. The standard surgical treatment is subcutaneous mastectomy
- D. The presence of gynecomastia is often associated with the subsequent development of breast cancer
- E. A formal endocrine evaluation is indicated in most patients with gynecomastia

Ans: E

Laboratory studies

Routine studies 🗨️ [1]

- Liver chemistries 🗨️
- Urea and creatinine 🗨️
- Thyroid function tests 🗨️

Suspected hypogonadism 🗨️

- Sex hormone profile 🗨️ [12]
- Serum prolactin levels 🗨️

Suspected estrogen-secreting tumors 🗨️

- Tumor markers
 - Elevated hCG or alpha-fetoprotein: suggestive of testicular germ cell tumors 🗨️ [1][2]
 - Elevated dehydroepiandrosterone: suggestive of adrenal tumors [1]

look for
↑ Prolactin
↑ TSH

13) Trastuzumab is a monoclonal antibody used to treat:

- A. breast cancer
- B. renal cell carcinoma
- C. Basal cell carcinoma
- D. Hodgkin's disease
- E. melanoma

Ans: A

Trastuzumab

- **Definition:** humanized monoclonal antibody against the HER2 tyrosine kinase receptor that is used in the treatment of HER2-positive breast and gastric cancer
- **Mechanism of action:** targets HER2/neu (c-erbB2) tyrosine kinase receptor → ↓ of HER2 initiated cellular signaling and ↑ antibody-dependent cytotoxicity → ↓ tumor growth
- **Indication:** all HER2-positive tumors
- **Side effects**
 - **Cardiotoxicity** (e.g., dilated cardiomyopathy with systolic CHF): An echocardiogram is recommended prior to initiating treatment to evaluate cardiac function. 📄
 - Gastrointestinal symptoms (e.g., diarrhea, nausea)
- **Contraindication:** pregnancy

🧠 Trastuzumab causes **dilated cardiomyopathy**: If you **trust** trastuzumab, it might **break your heart**.

🧠 For the most important indication of trastuzumab (**breast cancer**) and its target (**HER2**), think: **Her two** (HER2) **breasts** can be treated with **trastwozumab**.

14) A modified radical mastectomy was performed for a 55-year-old lady. The histopathology result revealed a 3.2-cm carcinoma in situ with an invasive component of 0.9 cm. and one out of 14 lymph nodes had macrometastasis and her metastatic workup was negative. What is her TNM stage:

- a. T1N1M0
- b. T3N1M0
- c. T2N1M0
- d. T0N1M0
- e. T3N2M0

Ans: C

TNM classification of breast cancer	
Stage	Tumor spread
	Primary tumor
Tis	<ul style="list-style-type: none"> • Carcinoma in situ <ul style="list-style-type: none"> ◦ Tis (DCIS): ductal carcinoma in situ ◦ Tis (LCIS): lobular carcinoma in situ ◦ Tis (Paget): Paget disease of the nipple without underlying invasive carcinoma
T1	<ul style="list-style-type: none"> • Tumor size ≤ 2 cm <ul style="list-style-type: none"> ◦ T1mi: microinvasion ≤ 0.1 cm ◦ T1a: ≤ 0.5 cm ◦ T1b: > 0.5 cm and ≤ 1 cm ◦ T1c: > 1 cm and ≤ 2 cm
T2	<ul style="list-style-type: none"> • Tumor size > 2 cm and ≤ 5 cm
T3	<ul style="list-style-type: none"> • Tumor size > 5 cm
T4	<ul style="list-style-type: none"> • Tumor of any size with infiltration of the skin or chest wall <input type="checkbox"/> <ul style="list-style-type: none"> ◦ T4a: infiltration of the chest wall ◦ T4b: ulcerations, skin edema (including peau d'orange), or ipsilateral skin satellite metastases ◦ T4c: T4a + T4b ◦ T4d: inflammatory breast carcinoma
	Lymph node involvement (clinical)
N1	<ul style="list-style-type: none"> • Involvement of mobile level I and II axillary lymph nodes
N2	<ul style="list-style-type: none"> • Metastases in fixed level I and II axillary lymph nodes or isolated metastases to ipsilateral internal mammary lymph nodes <ul style="list-style-type: none"> ◦ N2a: axillary lymph nodes (level I-II) fixed one to another ◦ N2b: isolated metastases to ipsilateral internal mammary lymph nodes
N3	<ul style="list-style-type: none"> • Metastases in supraclavicular or infraclavicular lymph nodes (level III) or simultaneous metastases in axillary and internal mammary lymph nodes <ul style="list-style-type: none"> ◦ N3a: metastases in infraclavicular lymph nodes ◦ N3b: axillary lymph nodes and metastases to ipsilateral internal mammary lymph nodes ◦ N3c: metastases in supraclavicular lymph nodes
	Distant metastases
M	<ul style="list-style-type: none"> • M0: no distant metastasis • M1: distant metastasis <input type="checkbox"/>

15) A 46-year-old female whose mammogram reveals a 1.1. cm density in the subareolar region of her left breast. The radiologist classifies as BIRADS 4B. She has no palpable lesion on physical exam. The most appropriate next step is:

- A) Repeat mammography in 6 months
- B) Stereotactic core needle biopsy.
- C) Magnetic resonance imaging (MRI) of the breast.
- D) Surgical excisional biopsy
- E) Genetic screening of inherited mutations.

Ans: B

BI-RADS score: ★

- Breast imaging-reporting and data system. US, Mammogram, MRI ... Risk of CA = zero

- 0: incomplete, needs additional imaging. 1: negative. 2: benign. 3: probably benign, needs 6-month follow up. 4: suspicious, needs biopsy. 5: highly suggestive of malignancy, needs biopsy. 6: biopsy-proven malignancy, surgical excision.

مبورناها وضا بعرف انها CA

16) Modern therapy for breast cancer focuses on molecular markers to help guiding treatment strategies. Which of the following statements is correct:

- A) Basal-like cancers are triple-positive cancers.
- B) Carriers of the BRCA2 mutation are more likely to have triple-negative cancers.
- C) Human epidermal growth factor receptor (HER)-2–positive cancers are unlikely to respond to treatment with trastuzumab.
- D) All breast cancers are sensitive to endocrine therapy.
- E) Oestrogen receptor (ER)-positive/HER-2–negative patients should be treated with endocrine therapy.

Ans: E

E. Oestrogen receptor (ER)-positive/HER-2-negative patients should be treated with endocrine therapy.

Explanation:

- **A) Incorrect** – Basal-like cancers are usually **triple-negative** (ER-negative, PR-negative, HER2-negative), not triple-positive.
- **B) Incorrect** – **BRCA1** mutations are more commonly associated with triple-negative breast cancer, while **BRCA2** mutations are often linked to hormone receptor-positive cancers.
- **C) Incorrect** – **HER2-positive** cancers are actually **highly responsive** to trastuzumab (Herceptin), a targeted therapy for HER2-overexpressing tumors.

- **D) Incorrect** – Not all breast cancers are sensitive to endocrine therapy; only those that are **ER-positive** respond to hormonal treatments like tamoxifen or aromatase inhibitors.
- **E) Correct** – **ER-positive, HER2-negative** patients benefit from **endocrine therapy**, which includes tamoxifen (for premenopausal women) or aromatase inhibitors (for postmenopausal women).

17) Which of the following is not true regarding magnetic resonance imaging (MRI) for evaluation of breast abnormalities:

- A) It's is useful for finding the primary breast lesion in patients with positive axillary nodes but no mammographic evidence of abreast tumor.
- B) It's useful as a screening tool for young patients who are at high risk to develop breast cancer.
- C) Its sensitivity in detecting invasive cancer is greater than 90%.
- D) It is more accurate than mammography in assessing the tumor extent in older women.
- E) It is more accurate than mammography in establishing the extent of disease in invasive lobular cancer.

! In postmenopausal women and women > 30 years of age with a suspicious breast mass, mammography is preferred over ultrasound. In premenopausal women < 30 years of age, ultrasound is preferred, because the higher density of breast tissue decreases the diagnostic power of mammography.

! Mammography has greatly improved the rate of early detection of noninvasive carcinomas.

3. Magnetic resonance imaging

- To distinguish scar from recurrence in women who have had previous breast conservation therapy for cancer.
- To assess multifocality and multicentricity.
- It is the best imaging modality for the breasts of women with implants.
- As a screening tool in high-risk women (because of family history).

Ans: D

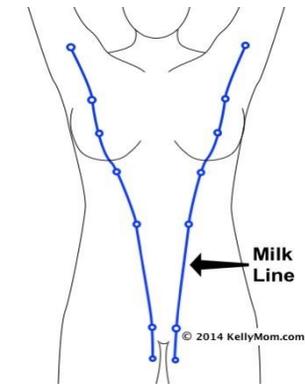
For women with lobular breast cancer a breast MRI scan might be used to see the cancer. This is because lobular breast cancer doesn't show up well on a mammogram or breast ultrasound. A breast MRI scan might also be used to assess the size of the cancer to check which kind of surgery is possible.

18) Regarding to breast development, which of the following statements is true:

- A) Inverted nipples at the age of puberty suggest underlying breast cancer.
- B) Extramammary breast tissue is not under the influence of the hormonal status of the patient.
- C) Accessory breast tissue can be found anywhere from the axilla to the groin.
- D) Breast enlargement in female neonates is indicative of an underlying estrogen-secreting adrenal tumor.
- E) Gynecomastia in a prepubertal boy requires excision

Ans: C

<p>What is the most common cause of inverted nipples?</p> <p>The most common cause of inverted nipples is being born with them, but some people may acquire inverted nipples due to aging, infection, breast injuries, or cancer. Although usually harmless, inverted nipples can lead to functional, psychological, and aesthetic consequences.</p>	<p>What is the most common site of ectopic breast?</p> <p>These abnormal structures are most often located in the axilla, followed by the area immediately inferior to the normal breast. This abnormality is detected on both sides in about 50% of cases (2, 3).</p>
<p>What type of breast cancer causes inverted nipple?</p> <p>Paget's Disease</p> <p>This is a cancer that occurs in the nipple or the surrounding areola, causing eczema-like symptoms. It usually accompanies underlying breast cancer in that breast. In addition to nipple inversion, symptoms of Paget's disease include: Crusty, red skin on the nipple or areola.</p>	<p>Neonatal breast enlargement is a normal response to postnatally falling levels of maternal estrogen which is thought to induce the releasing of prolactin from newborn's pituitary gland and usually progress during the first 2-months of life.</p>



19) Regarding breast carcinoma in men, which statement is true:

- A) lobular carcinomas is the most common type
- B) It is more commonly associated with a mutation in the BRCA2 gene
- C) The prognosis is worse stage for stage than for women
- D) Sentinel lymph node biopsy (SLNB) is contraindicated
- E) Gynecomastia is a risk factor.

Ans: B

- BRCA-positive women develop breast cancer earlier than women without the mutation.
- An estimated 55-60% of women with BRCA1-positive status will develop invasive breast cancer before the age of 70; the number is 45% in BRCA2-positive women.^[10]
- Men with breast cancer are often positive for BRCA2.

20) A 35-year-old woman, who is currently breast-feeding her firstborn child, develops an erythematous and inflamed fluctuant area on breast examination. Which of the following statements is wrong concerning her diagnosis and management:

- A) The most common organism which would expect to be cultured is Staphylococcus aureus
- B) Open surgical drainage is likely indicated
- C) Breast-feeding absolutely should be discontinued
- D) If the inflammatory process does not completely respond, a biopsy may be indicated
- E) The organism has gained access through a macerated nipple

Ans: C

⑥ Lactational mastitis: *causes of hyperlactation*

- Infection of the breast tissue in a lactating woman (usually within 6 weeks postpartum) due to breast engorgement and milk stasis. Presents with **redness, tenderness, fever, fatigue**, etc.
- Should drain breast with **breastfeeding, pumping**, and give **analgesia**. If it lasts **>1 day**, give antibiotics that cover **S. aureus**. Might be caused by MRSA. *Normal flora of skin*

Breast abscess treatment: *Don't stop*

- Analgesia, and broad-spectrum antibiotics. Continue breastfeeding.
- US-guided aspiration, incision and drainage if aspiration fails.
- Rule out inflammatory breast cancer if persistent. *→ Mastitis ←*

21) Which of the following statements is wrong concerning the histologic variants of invasive breast carcinoma:

- A) The presence of an in situ component with invasive ductal carcinoma does not adversely affects prognosis
- B) Medullary carcinomas, although often of large size, are associated with a better overall prognosis than common invasive ductalcancers
- C) Mucinous or colloid carcinoma is one of the more common variants of invasive ductal cancer
- D) Invasive lobular carcinoma is associated with a higher incidence of bilateral breast cancer
- E) When mixed histologies are encountered, the clinical behavior parallels that of the invasive ductal carcinoma

Ans: C

22) True about breast cancer recurrence:

A) 15-20% of well treated stage I and II will recur

B) Most recurrences happen within 5 yr

C) Radiation of the whole breast reduces risk from 40-10%

Ans: B

- **Recurrence:** up to 40% are local (chest wall, lymph nodes). Relapse typically occurs within the first five years after completion of treatment!

23) Gynecomastia, false:

- A) Pseudo gynecomastia can be treated with tamoxifen
- B) no increased risk of cancer
- C) testosterone can be used for gynecomastia secondary to testosterone deficiency - increase incidence with advancing age

Ans: B

- **Medical therapy:** indicated for cosmesis or tender gynecomastia in select patients (Patients with large (> 5 cm) gynecomastia affecting self-confidence or tender gynecomastia, both present for < 1 year).
 - **Testosterone replacement:** in patients with hypogonadism.
 - **Selective estrogen receptor modulators (e.g., tamoxifen):** in patients with severe pubertal gynecomastia or idiopathic gynecomastia > 3 months that causes substantial breast enlargement with tenderness and/or affects self-confidence.
- **Surgery (subcutaneous mastectomy):** indicated for cosmesis in persistent gynecomastia (> 1 year).

B. Pathological gynecomastia

- **Due to estrogen excess**
 - Malignancies: **Leydig cell tumor**, **Sertoli cell tumor**, ectopic hCG-producing tumors (e.g., lung cancer, hepatocellular cancer), adrenocortical tumors
 - **Liver cirrhosis.**
 - Hyperthyroidism.
- **Due to decreased testosterone**
 - Chronic kidney disease.
 - **Klinefelter syndrome.**
 - Mumps orchitis; castration; trauma to both testes.
- **Due to drugs (focus on the *bolded ones*)**
 - Inhibitors of testosterone receptors
 - **Antiandrogens** (e.g., bicalutamide, cyproterone acetate, flutamide).
 - High-dose **cimetidine** (H2 receptor blocker).
 - **Spirolactone.**
 - Inhibitors of testosterone synthesis
 - Spirolactone.
 - **Ketoconazole.**
 - Chemotherapy drugs (e.g., cyclophosphamide, methotrexate, bleomycin, cisplatin, vincristine).

25) More associated with breast malignancy:

- A) Atypical ductal hyperplasia
- B) Sclerosing adenosis
- C) Duct ectasia
- D) Fibroadenoma

Ans: A

- Biopsy: confirms diagnosis if imaging is inconclusive. Findings may include:

1- Non-proliferative disease

- Cysts: dilated, fluid-filled ducts (blue dome cysts on gross exam).
- Apocrine metaplasia.
- Stromal fibrosis: (no malignant potential).

2- Proliferative disease without atypia

- Sclerosing adenosis: proliferation of small ductules and acini in the lobules, calcifications (slightly increased risk of breast cancer).
- Ductal hyperplasia
 - Papillary proliferation (papillomatosis).
 - Epithelial hyperplasia of terminal duct cells and lobular epithelium.

3- Proliferative disease with atypia

- Atypical lobular hyperplasia (ALH).
- Atypical ductal hyperplasia (ADH).

26) A 40 year old examined and found to have a 4 cm tender cyst, your approach:

- A) Mammogram
- B) MRI
- C) Aspiration and cytology
- D) reassure and re-examine after menstruation.

Ans: C

Explanation:

- A **4 cm tender cyst** in a 40-year-old suggests a **symptomatic breast cyst**, which is often benign.
- **First-line approach: Fine-needle aspiration (FNA)** can confirm if it is fluid-filled.
- If the **aspirated fluid is clear and the cyst resolves**, no further workup is needed.
- If the **fluid is bloody, the mass persists, or recurs**, cytology and further imaging (e.g., **mammogram or ultrasound**) should be done to rule out malignancy.

Why not the other options?

- **A) Mammogram** – Typically used for solid masses or screening; not the first choice for a cyst.
- **B) MRI** – Not necessary for initial evaluation of a cyst.
- **D) Reassure and re-examine after menstruation** – While some cysts fluctuate with the menstrual cycle, a **4 cm tender cyst** should be evaluated immediately with aspiration.

Approach [4][1]

- Follow age-appropriate breast imaging for a palpable breast mass. [1][5][6]
- Use targeted ultrasound to evaluate any masses identified on mammography. [1][5][6]
- Tailor further management based on imaging findings.
 - Simple breast cyst: no further diagnostic evaluation [1][4]
 - Complex breast cyst: ultrasound-guided core needle biopsy or excisional biopsy to rule out concomitant malignancy
 - Complex breast cyst: surveillance, therapeutic aspiration, or biopsy depending on clinical concern for malignancy

① Ultrasound is the preferred modality for differentiating between cystic and solid breast masses. [1][5][6]

① Biopsy is recommended for all breast cysts with suspicious features (e.g., doppler flow, thick septations or walls, solid components). [5]

① Cytological evaluation is recommended if bloody fluid is obtained on therapeutic or diagnostic aspiration. [1][2]

Initial age-appropriate imaging of a palpable breast mass [5][1]

Results of breast imaging are typically reported using the standardized American College of Radiology Breast Imaging Reporting and Data System (BI-RADS). [1][9]

- Age < 30 years: breast ultrasound
- Age ≥ 30 years: mammography or digital breast tomosynthesis (DBT)
- Age 30–39 years: any of the above modalities
- Pregnant or lactating patients: breast ultrasound [1][10]

① Premenopausal women < 30 years of age and lactating women often have dense breast tissue, which decreases the diagnostic power of mammography; ultrasound is recommended in these individuals. [1][10][5]

① MRI breast is not routinely indicated in the evaluation of a palpable breast mass. [5]

27) Which of the following is true about breast cancer:

A) dimpled skin is caused by Cooper ligament shortening.

Ans: A

Breast dimpling

Dimpling in the skin of the breast may be a sign of invasive lobular carcinoma (ILC), a common type of breast cancer. It's sometimes hard to tell the difference between breast dimpling or stretch marks, so you should seek medical attention if you see signs of either.

- Skin changes:
 - Retractions or dimpling (due to tightening of the Cooper ligaments).
 - Peau d'orange: skin resembling an orange peel (due to obstruction of the lymphatic channels).
Presenting signs: Redness, edema, and pitting of the hair follicles.

28) Paget disease of the nipple:

A)presents as eczema to us type of lesion.

Ans: A

1. Paget disease of the breast

- Definition: a ductal carcinoma (usually adenocarcinoma- either in situ or invasive) that infiltrates the nipple and areola.
- Clinical features:
 - Erythematous, scaly, or vesicular rash affecting the nipple and areola.
 - Pruritus, burning sensation, nipple retraction.
 - The lesion eventually ulcerates → blood-tinged nipple discharge.
- Diagnostics:
 - Nipple scrape cytology: large, round cells with prominent nuclei.
 - Punch or wedge biopsy.
- Differential diagnosis: mamillary eczema.
- Treatment: surgical treatment, using a breast-conserving procedure if possible.

29) breast CA increases with except:

- A) braca 1
- B) family hx
- C) Induced menopause
- D) first child at 35

Ans: C

Breast cancer treatment often causes women to enter menopause prematurely. The change in hormone levels and estrogen depletion caused by stopping hormone replacement therapy or undergoing chemotherapy or hormonal therapy can trigger side effects commonly associated with menopause.

30) compression of dermal lymphatic vessel causes one of the following:

- A. Reflex pain in other side
- B. peau d'orange
- C. nipple retraction

Ans: B

- Skin changes:
 - Retractions or dimpling (due to tightening of the Cooper ligaments).
 - Peau d'orange: skin resembling an orange peel (due to obstruction of the lymphatic channels).
Presenting signs: Redness, edema, and pitting of the hair follicles.

31) Woman with breast cancer, presented with altered sensorium, upon lab investigations Calcium was 15mg/dl, which of the following is LEAST appropriate:

↳ $Ca^{+2} > 14$
↳ Severe Hypocalcemia

- A) Dexamethasone and call for Oncology consult
- B) inorganic phosphate
- C) Oral phosphate (not sure)
- D) IV hydration
- E) IV furosemide

Ans: B not sure

Explanation:

This patient has **severe hypercalcemia (Calcium = 15 mg/dL)**, which is a medical emergency. The most effective initial treatments include:

- **IV hydration (D)** – First-line to promote calcium excretion.
- **IV furosemide (E)** – Used after hydration to enhance calcium excretion (though not routinely recommended unless volume overload occurs).
- **Dexamethasone (A)** – Can help in malignancy-associated hypercalcemia (especially in lymphoma, multiple myeloma).
- **Oral phosphate (C)** – Sometimes used in chronic hypercalcemia but not first-line.

Why is inorganic phosphate (B) least appropriate?

- **Phosphate therapy is generally NOT recommended in hypercalcemia** because it can lead to **metastatic calcifications** (precipitation of calcium-phosphate in tissues, including kidneys and blood vessels).
- It does not provide rapid calcium reduction and is more likely to cause harm in severe hypercalcemia.

32) Not a finding in locally advanced breast CA:

- A) Arm edema
- B) Skin dimpling
- C) Nipple inversion

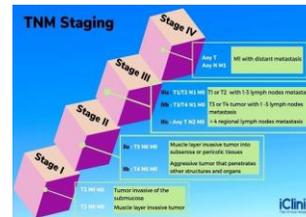
Ans: B

to differentiate from Q3

- nipple retraction → early stages of breast cancer and not in locally advanced cases.
- while nipple inversion could be in locally advanced cases.
- Arm edema could be locally advanced cases. → due to lymphatic obstruction.
- *but skin dimpling → early stages of breast cancer

32) all affect metastasis except :

- A) lymph nodes involvement
- B) T stage
- C) +ve circumferential
- D) Lymphovascular dissemination
- E) degree of differentiation



What is the circumferential margin?

Circumferential resection margin (CRM) is the closest distance between the radial resection margin and the tumor tissue by either direct tumor spread, areas of neural or vascular invasion, or the nearest involved lymph node.

Prognostic factors [36]

Stage at diagnosis

The most important prognostic factor is the breast cancer stage at time of diagnosis. Earlier stages have a significantly better prognosis than late stages.

- Tumor size**
 - Large tumors have a less favorable prognosis because they are associated with higher rates of recurrence.
 - Positive correlation between tumor size and number of involved lymph nodes
- Lymphatic spread:** Axillary lymph node status is the one of most important prognostic factors.
- Histological tumor grade:** High-grade tumors are associated with aggressive progression.
- Receptor status**
 - Hormone-negative breast cancer has a poorer prognosis than hormone-positive breast cancer.
 - HER2-positive tumors show aggressive growth and metastasize quickly compared to HER2-negative tumors.
 - Triple-negative disease is associated with a poor prognosis.

HER2-positive cancers demonstrate more aggressive tumor growth and higher recurrence rates and are, therefore, associated with a poor prognosis. However, since the development of targeted therapy with trastuzumab, the prognosis for patients with HER2-positive cancers has improved.

Other risk factors

- Advanced age
- Aneuploidy

What is lymph vascular invasion breast cancer?

Clinical studies show that lympho-vascular invasion correlates with breast cancer lymph node metastases and poor prognosis [15, 16]. A positive margin is associated with increased local recurrence (LR) in early-stage BC patients receiving BCS [20, 21].

Metastatic cancer is typically described based on how far it's spread from the original cancer site: Regional metastatic breast cancer means the original tumor has spread to nearby lymph nodes (often the axillary lymph nodes, but sometimes internal mammary lymph nodes and supraclavicular lymph nodes).

Ans: B

33) Noninvasive ca of the breast:

- a. Comedo
- b. Medullary
- c. Mucinous
- d. Infiltrative ductal
- e. papillary

Ans: A

• Noninvasive carcinomas

Type	Characteristics	Growth pattern
DCIS	<ul style="list-style-type: none">• Macroscopic: firm mass may be visible.• Microscopic<ul style="list-style-type: none">○ Enlarged ducts lined with atypical epithelium.○ Intact basal membrane.○ Microcalcifications are noted occasionally, resulting from calcification of necrotic debris or secretory material.	<ul style="list-style-type: none">• Two growth patterns<ul style="list-style-type: none">○ Comedo necrosis: DCIS with central necrosis due to rapid intraductal proliferation of cells; associated with an increased risk of malignancy○ Noncomedo (cribriform, papillary, solid)
LCIS	<ul style="list-style-type: none">• Macroscopic: not visible.• Microscopic<ul style="list-style-type: none">○ The lobules are filled with monomorphic cells.○ Intact basal membrane.	<ul style="list-style-type: none">• Diffuse.

34) fibroadenoma of breast , all true except :

- A. Can be treated conservatively safely
- B. mostly in adolescents
- C. 30% decrease in size after 2 years
- D. Malignant potential
- E. Monoclonal cell proliferation

Ans: E

Is fibroadenoma polyclonal?
It was found that fibroadenoma was polyclonal, but phyllodes tumor was made up of both monoclonal and polyclonal cell components.

BRADS-2
Fibroadenoma: *prolif. without atypia*
- A benign, **solid tumor** (the MC solid breast mass in women between 15-35 years).
- Well-circumscribed, *not circ* **painless, firm, mobile, and rubbery (mouse)**.
- Pathology shows **normal ducts and lobules**.
- Do US for women <30, do US and mammogram for >30. *unless in less than 30 yrs*
- Treatment: **perform a tissue diagnosis with core needle or excisional biopsy and/or follow up with US. Surgically excise if increases in size, painful, and for cosmetic reasons.**
- Simple fibroadenoma is one with associated proliferative lesions, no increased risk. Complex fibroadenoma contains other proliferative changes, slightly increased risk. Phyllodes tumor is similar to fibroadenoma but has more stroma, this has risk of malignancy. **Giant fibroadenoma is >10cm; excision is recommended. Juvenile fibroadenoma (10-18 years). Adenoma has minimal stroma.**

Epidemiology [1][2]

- The most common breast tumor in women < 35 years of age
- Peak incidence: 20-30 years

Prognosis [1][2]

- Generally good
- Most fibroadenomas are not associated with an increased risk of breast cancer.
- Complex fibroadenomas may be associated with an increased risk of breast cancer.

35) Duct ectasia , all are true except :

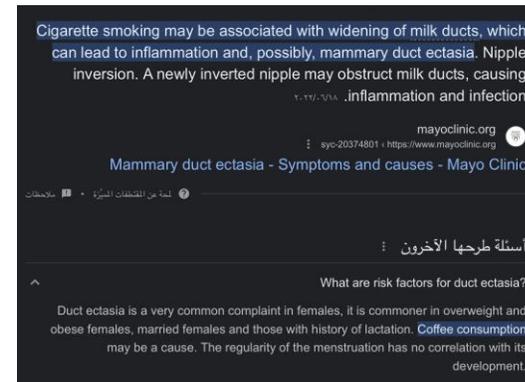
- a. Can cause nipple inversion
- b. wide excision of major duct is treatment
- c. Brown – green discharge
- d. Decrease incidence in smokers
- e. usually associated with aerobic and anaerobic infections



Ans: D

3- Mammary duct ectasia (plasma cell mastitis)

- Subareolar periductal chronic inflammatory condition defined by dilated mammary ducts which are eventually clogged. It is rare condition that affects multiparous postmenopausal women.
- Present as a peri areolar firm, painful mass with **green-brown nipple discharge (most common cause for green discharge)** and **nipple retraction**, mimicking the changes caused by some cancer. However, on biopsy it shows chronic inflammation with **plasma cells**.
- Most cases resolve spontaneously. May need to give antibiotics if it gets infected. Surgical excision for persistent lesions.



36) which of the following is not associated with the prognosis of breast CA:

- A. no. of lymph nodes involved
- B. level of L.N involved
- C. Histopathology
- D. oestrogen receptors
- E. Pregnant After 2 years of treatment by mastectomy

Ans: E

38) Cystic mass in the breast in a 33 year old woman , managed by :

A) Aspiration & Cytology

B) reassurance and reexamine post-menopause.

Ans: A

38. single most important risk factor for Breast Cancer:

A) Age

Ans: A

The two most significant risk factors for developing breast cancer are being female and increasing age. For example, a young woman in her

39) Infiltration of Cooper ligament in breast CA:

- A) Peau d'orange
- B) skin distortion
- C) nipple retraction

Ans: B

- Skin changes:
 - Retractions or dimpling (due to tightening of the Cooper ligaments).
 - Peau d'orange: skin resembling an orange peel (due to obstruction of the lymphatic channels).
Presenting signs: Redness, edema, and pitting of the hair follicles.

40) about inflammatory breast ca. except:

- A) bad prognosis
- B) can be mixed up with breast abscesses
- C) Rapidly growing
- D) treatment by mastectomy and chemoradiotherap

Ans: D

D) Treatment by mastectomy and chemoradiotherapy – This is partially true, but incomplete. Treatment starts with neoadjuvant chemotherapy, followed by surgery (mastectomy) and radiation therapy.

41) 2 cm mass, no lymph nodes and no mets which stage?

Stage 1

BREAST CANCER STAGES

BREAST CANCER STAGING MEASURES THE SPREAD OF THE DISEASE UPON DIAGNOSIS. IN ORDER TO DETERMINE THE CHOICE OF TREATMENT, IT IS VERY IMPORTANT TO STAGE THE CANCER



STAGE	0	1	2	3	4
TUMOR SIZE	VERY SMALL, INSIDE THE GLANDS	LESS THAN 2 CM	2-5 CM	5 CM AND LARGER	ANY SIZE
LYMPH NODES	NO CANCER	NO CANCER	AFFECTED BY CANCER	AFFECTED BY CANCER, CANCER HAS REACHED THE MUSCLES AND SKIN	AFFECTED BY CANCER
SPREADING	CONFINED TO THE BREAST AREA, NOT OUTSIDE	CANCER HAS SPREAD OUTSIDE THE BREAST AREA TO ANY PART OF THE BODY			
EV	-EV	-EV	-EV	-EV	+++EV
5 YEAR SURVIVAL RATE	100%	100%	87%	61%	20%

+962 6 5530800 +962 6 5530870 JBCF Jordan Jordan Breast Cancer Program www.jbcp.jo

42) 1.1 cm mass, mammogram BIRAD 4... Best next step?

Core needle biopsy

- BI-RADS score:
- Breast imaging-reporting and data system. *US, Mammogram, MRI ... → Risk of CA = zero*
 - 0: incomplete, needs additional imaging. 1: negative. 2: benign. 3: probably benign, needs 6-month follow up. 4: suspicious, needs biopsy. 5: highly suggestive of malignancy, needs biopsy. 6: biopsy-proven malignancy, surgical excision.
- مورناها واذا بعرفت انها CA*

43) Which of the following is NOT TRUE about medullary breast cancer?

- A. Lower rates of mets to lymph nodes
- B. Strongly Positive ER PR
- C. Looks benign on US imaging
- D. Lymphocytic infiltration
- E. Statistically better than average prognosis

Ans: B

Medullary breast cancer ^[14]

- **Characteristics**

- Rare subtype of invasive ductal carcinoma
- Most common tumor associated with the BRCA1 mutation
- Well-circumscribed soft tumor with smooth borders (may appear benign)
- Usually triple-negative
- Lymphadenopathy 

44) Which of the following is not a risk factor for breast cancer?

- A. artificially induced menopause
- B. First pregnancy after 35 years
- C. history of multiple epitheliosis on previous biopsy
- D. her mother and sister have breast cancer
- E. history of breast cancer in the contralateral breast

Ans: A

45) Which of the following favors a malignant breast mass over benign?

- A. excessive mobility within the breast
- B. tenderness upon palpation
- C. variation upon menstrual cycle
- D. skin tethering
- E. Well, differentiated smooth edges

Ans: D

**Clinical features of Breast
Cancer**

- ✓ Breast lump
- ✓ Nipple retraction/inversion
- ✓ Nipple discharge
- ✓ Excoriation of the nipple's epidermis
- ✓ Increased volume of the breast
- ✓ Breast/nipple pain
- ✓ Redness of the skin
- ✓ Thickening of the skin
- ✓ Peau d'orange (orange peel skin)
- ✓ Skin tethering/dimpling
- ✓ Axillary lump/mass

46) Regarding phyllodes tumour all of the followings are true EXCEPT:

- A. 90% are malignant.
- B. One out of five are associated with Fibroadenoma.
- C. Treatment is by wide excision or mastectomy.
- D. Axillary lymph nodes are rarely involved.
- E. They are usually unifocal in the breast.

Ans: A

Benign (non-cancerous) tumors account for more than half of all phyllodes tumors. These tumors are the least likely to grow quickly or to spread. Borderline tumors have features in between benign and malignant (cancerous) tumors. Malignant (cancerous) tumors account for about 1 in 4 phyllodes tumors. Jun 15, 2022

Phyllodes tumor

Summary

Phyllodes tumor is a rare fibroepithelial breast tumor that typically manifests in individuals between 40–50 years of age as a painless, multinodular breast mass. Unlike fibroadenomas, phyllodes tumors tend to increase in size more rapidly over time. On breast ultrasound, phyllodes tumors appear as a hypoechoic solid mass containing cysts; on mammography, they appear as a hyperdense mass. Biopsy is required for diagnostic confirmation. Histological findings of stromal cellularity and leaf-like architecture distinguish phyllodes from fibroadenoma. Phyllodes tumors are categorized as benign, borderline, and malignant according to the following features: border infiltration, mitotic activity, stromal atypia, and hypercellularity. Malignant or borderline phyllodes tumors can metastasize hematogenously. Surgical excision is recommended for nonmetastatic disease. Metastatic phyllodes tumors carry a poor prognosis; management (e.g., palliative surgery, chemotherapy) should be tailored to the individual. Phyllodes tumors have a high rate of recurrence after surgical excision.

47) Breast carcinoma with the worst prognosis is:

- A. Infiltrating ductal carcinoma
- B. Medullary carcinoma
- C. . Mucinous (colloid) carcinoma
- D. Papillary carcinoma
- E. Tubular

Ans: A

Which of the following is mostly associated with breast malignancy?

- A. Ductal hyperplasia with atypia
- B. Sclerosing adenosis
- C. Duct ectasia
- D. Fibroadenoma
- E. Phyllodes tumours

Ans: A