جامعة الملك سعود
King Saud University

L18-Skin and Soft Tissue Tumors

Surgery Team
MED 433

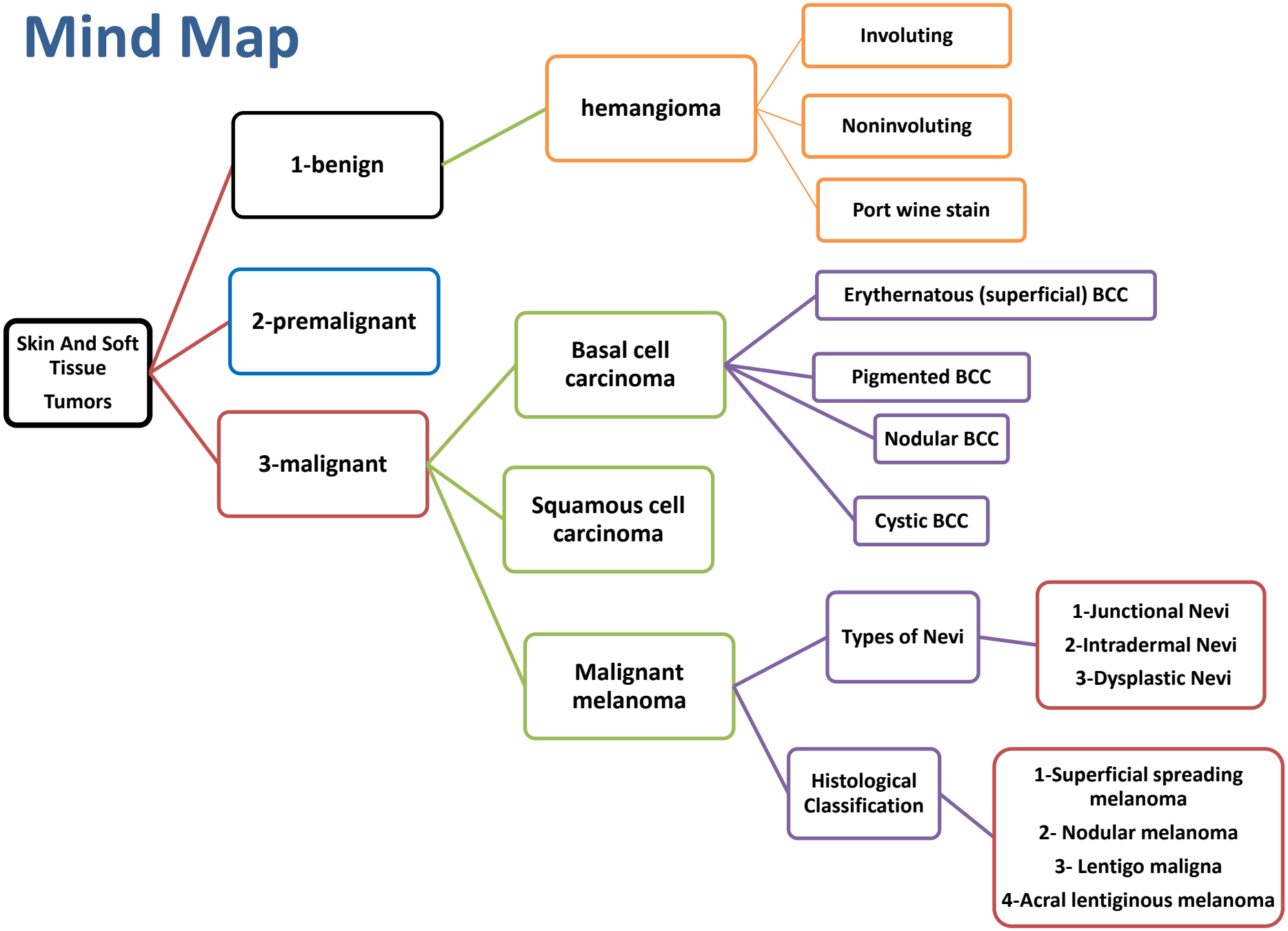
MED 433

Objectives :

Color Index: Slides & Raslan's () | Doctor's Notes | Extra Explanation | Additional

This work is based on doctor's Slides +Notes and Raslan's only (Does not include the book)

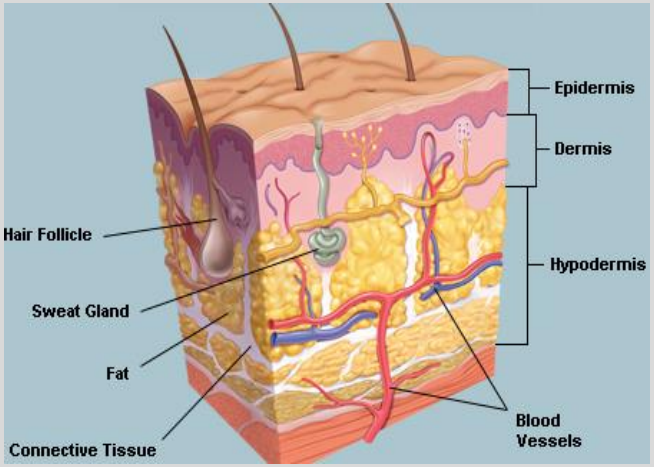
Mind Map


Skin And Soft Tissue Tumors
1-benign
hemangioma
Involuting
Noninvoluting
Port wine stain
2-premalignant
3-malignant
Basal cell carcinoma
Erythernatous (superficial) BCC
Pigmented BCC
Nodular BCC
Cystic BCC
Squamous cell carcinoma
Malignant melanoma
Types of Nevi
1-Junctional Nevi
2-Intradermal Nevi
3-Dysplastic Nevi
Histological Classification
1-Superficial spreading melanoma
2- Nodular melanoma
3- Lentigo maligna
4-Acral lentiginous melanoma

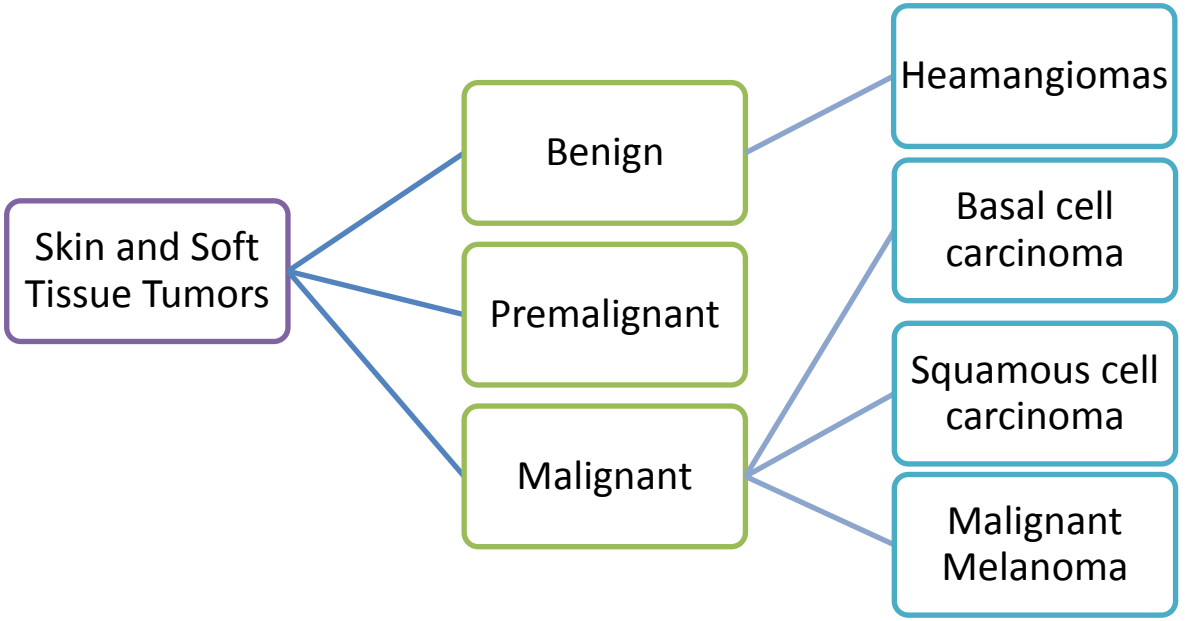
1)Introduction

Skin and Soft Tissue Tumors can Arise from any histological structures that make up skin:

- Epidermis
- Connective tissue
- Glands
- Muscle
- Nerves



Classification:



1. Hemangioma:

It is the commonest skin tumor, and the commonest benign tumor of infancy.

It is classified based on the likelihood of proliferation or regression to:

A. **Involuting**→will regress on its own.
B. **Non-involuting** → won't regress on its own.
C. **Port Wine Stain**

A) Involuting Hemangioma (hemangioma Of Childhood):

- It makes up to **95% of all hemangiomas**.
- It is a neoplasm of **endothelial cell origin**, i.e. **it is a hamartoma, not a true neoplasm**.
- Presents at birth or during the **first 2-3 weeks after birth**, and **grows rapidly** for 4-6 months.
- Undergoes complete spontaneous slow involution; usually completely disappears at the age of 5-7 years.

In involuting hemangioma, the deeper they go the bluer they become, whereas the more superficial the more cherry red they get

Both benign tumors and hamartomas are composed of normal cells in excessive quantities, but benign tumors have a normal arrangement whereas hamartomas have an abnormal arrangement of cells.

A) Involuting Hemangioma – Cont:

Classification:

1- Superficial (Strawberry News) (very superficial in the dermis)

- Strawberry nevus
- Nevus vasculosa
- Capillary heamangioma
- **Appears →** as a **sharp demarcated, red**, slightly raised lesion with an irregular surface

2- Deep (Cavernous Hemangioma): (Combined dermis and deep dermis)

o Cavernous

Appears as →a **blue tumor** covered by normal skin

3- Combined:

- Strawberry
- Capillary & Cavernous

Appears as → a firm **bluish tumor**, may extend deeply into subcutaneous tissues.

Treatment:

No need for treatment, just observe unless → **it involves a vital organ or interferes with physiological functions, e.g. eyelid**

↓

so we have to surgically intervene

B) Non-Involuting Hemangioma → It won't regress on its own.

- **True benign tumors.**
- Usually present at birth
- There is **no rapid growth phase** → its growth is proportional to the growth of the child.
- Persists to adulthood.
- **Causes severe aesthetic (cosmetic) problems.**
- May cause arterio-venous fistulas eventually leading to cardiac failure.
- **Treatment** → Not satisfactory.

C) Port Wine Stain:

- An extensive intradermal hemangioma, just below the epidermis, which is mostly made up of a collection of dilated venules and capillaries. It has a deep purple red color.

- May involve any portion of the body, usually as flat patches in the face.

- Usually follows the correlation of **sensory branches of the 5th nerve**; so if it involves one branch of the trigeminal, **it will spread to half of the face**, **whereas if it involves both branches it will spread to the whole face.**

- Microscopically, it appears as **thin walled capillaries distributed throughout the dermis, lined by thin mature flat endothelial cells.**
- **Treatment:**
  - **Unsatisfactory.**
  - **Tattooing.**
  - **Radiotherapy** → causes a scar as it destroys both blood vessels and the skin overlying the lesion.
  - **Laser**: → has a special wavelength affecting the blood vessels without affecting the skin, but it is expensive. **(casused a big improvement in the treatment)**

3)Malignant Tumors

1. Basal Cell Carcinoma (Rodent Ulcer):

- **The most common malignant cancer of all skin tumors.**
- **Growth is slow** (**not aggressive**), steady & insidious (**painless**). Several years may pass before patient becomes concerned.
- Locally invasive malignant tumor(Invade adjacent tissue)→ which may lead to massive ulceration
- **Very rare to metastasize** & death may occur by invading deeper tissues or by extension into intracranial or major blood vessels (**e.g. cavernous sinuses)**
- Mostly presents in the **face and the neck**.

Affects ages **over 40→(because the immunity decreases)**

- men are more affected than women.

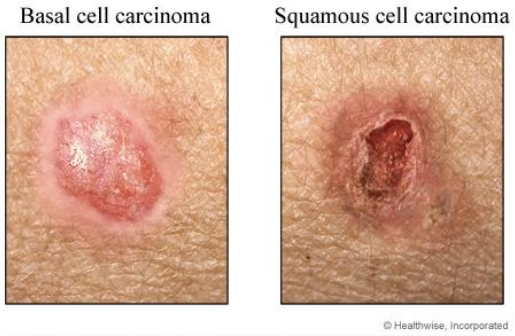
(damages the DNA)

Risk is increased in:

- Individuals with high cumulative **exposure to UV light through sunlight**, **e.g. live in tropical areas.**
- Those with fair, **white skin**, especially when the person has blond or red hair and blue, green, or gray eyes, e.g. **westerners working in KSA.**

Appearance:

- **Small translucent**, skin elevated nodule with rolled pearly edges.
- Tetangiectatic vessels may occur on the surface.
- Flat and white or waxy appearance with firm palpation.



Histologically

it appears as elongated strains of basal cells that infiltrate the dermis.

Based on appearance, there are 4 different forms: More details in the next slide

1. Basal Cell Carcinoma - Cont. :

Based on appearance, there are different forms:

1-Erythernatous (superficial) basal cell carcinoma:

- Occurs most frequently on the trunk.
- Appears as a **reddish plaque with an atrophic center**, and smooth, slightly raised borders.

2. Pigmented basal cell carcinoma (frequent in our country):

- **Sometimes mistaken with melanoma**, but it is darker.
- Extends deep to the subcutaneous tissue.

3. Nodular basal cell carcinoma.

4. Cystic basal cell carcinoma

5-Sclerosing Morphia

- Less common
- Elongated strands of basal that infiltrate the dermis
- Flat & whitish or waxy appearance and firm palpation

Treatment:

- **Curettage and electrodessication (cautery),** with excising a **safety margin of 2-3 mm**.
- **Surgical excision** (**the best treatment**): small moderate sized lesions, with removal of the subcutaneous tissue and do reverse face-lift flab if the lesion occurs in the face.

- **Radiotherapy**: →good for treatment of structures that are difficult to reconstruct but hospitalization is not required. Should not be used in patients under 40 years, due to mutation, or in patients who failed to respond to radiation therapy. **Treatment usually lasts 4-6 weeks.**

- The more **well differentiated** the tumor → the more radioresitant it is.
- the more **undifferentiated** the tumor → the more radiosensitive it is.

* (So it's better to have histopathological results before starting treatment)

2. Squamous Cell Carcinoma (SCC):

Remember

- The **first most common cancer in dark skinned people**, and the second in **light** skinned.
- There is a **potential for metastatic spread**.
- **The causative agents are the same as basal cell carcinoma, along with:**
    - Excessive contact with hydrocarbons **(Oil derivatives)** such as tar, gasoline, and paints. (i.e. occupational hazard related)
    - Exposure to ionizing radiation. And Chronic ulcers.
    - Scars of thermal burns healed repeatedly by fibrosis (especially if it was over a joint), which may lead to Marjolin's ulcer.
- Most common sites are the face and neck, e.g. ears cheeks, and the lower lip, and the back of the hand.

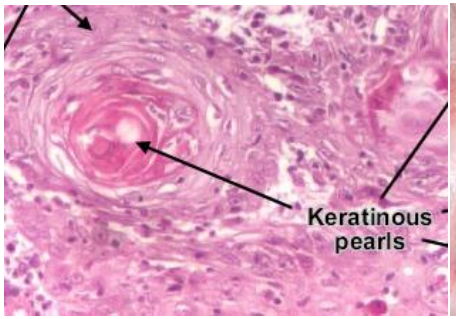
Presents as:

- Locally invading without metastasizing.
- Pre-malignant tumor, as Bowen's disease or chronic radiation dermatitis.
- Rapidly growing, widely invasive with metastasis, especially SCC arising from normal skin.
- Initially starts as an erythematous plaque or nodules with indistinct margins.
- Surface may be: **1-flat** **2-verrucose** **(like a wart)** **3-ulcerative**. (this at the beginning, when it get advanced all the three will be ulcerated due to the interrupted blood supply)

Generally,
Sarcomas (cancers arise from connective tissue) metastasize **through blood**, and
Carcinoma (cancers arise from epithelial tissue) metastasize **through lymphatics**.

Histologically :

- Malignant epithelization is seen extending down into the dermis like horns of pearls, which is not seen in basal cell carcinoma. (it is hard to differentiate between basal cell and squamous cell carcinoma clinically, histology is the key).



Treatment of SCC:

- **Surgical excision with 4-5 mm margin in all directions.** → **Remember**
- Radiotherapy: the more well differentiated the tumor, the more it resembles normal skin, the less potential to metastasize, and the less radio-sensitivity, and vice versa.

3. Malignant Melanoma:

- Incidence is over 300,000 of skin tumors every year in USA, 9000 of these are melanomas, **(i.e. Melanomas are 4.6% of all skin tumors)**
- **2/3 of all skin tumor deaths are from melanomas.**
- Incidence of and survival also were increased from 41% to 67%.
- Whites have a higher incidence than blacks, but there is **NO** sexual predominance.

Risk factors:

- **UV radiation**. **(Either from the sun, or tanning beds ☺)**
- Family history.
- Average person has 15-20 nevi around his body, 1/3 of the melanomas arise from a pre- existing pigmented nevi . **(so nevi is benign but could transfer to a malignant melanoma)** ☞ **More details about nevi in the next slide ..**

Types of Nevi:

1. Junctional nevi: (arise from the junction between the epidermis and dermis)

- Small, circumscribed, light brown or black colored, flat, slightly raised and rarely contains hair.
- Mainly lies between epidermis and dermis.
- May be formed in mucous membranes, genitalia, soles and palms.
- **More likely** to be malignant.

2. Intradermal nevi:

- Small spots, color ranges from blue to bluish black, flat and dome shaped.
- Compound; found in both epidermis and dermis.
- **Less likely** to become malignant.

3. Dysplastic nevi:

- Pink base, small with indistinct irregular edges.
- Usually have embryonic tissues, i.e. ectoderm, mesoderm, or endoderm.
- **Most dangerous type in newborns.**
- Family history is important, any **suspicious lesions must be excised**.
- Congenital: excision in 1% of newborns, **considered to be premalignant.**

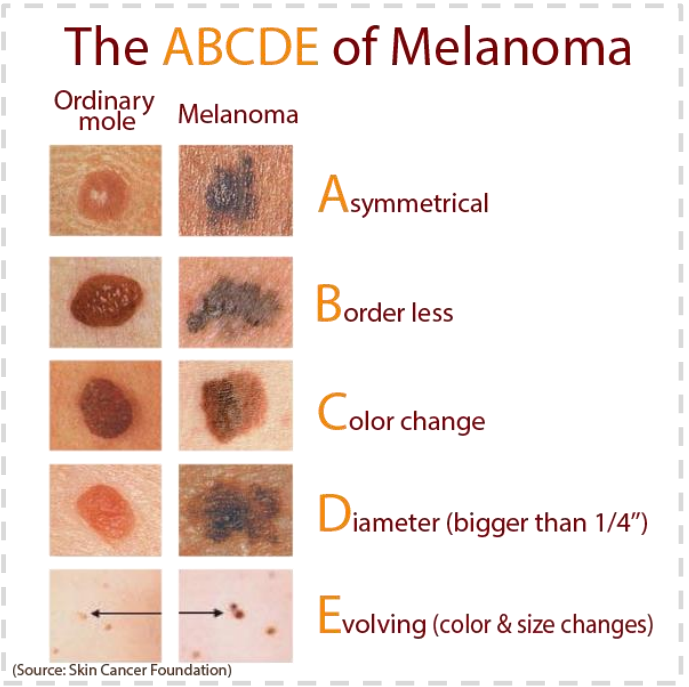
Histological classification of Nevi:

- **Superficial spreading melanoma (the commonest):**
  - arises from a preexisting mole; common in blacks without sexual predominance.
- **Nodular melanoma:**
  - becomes large and ulcerated before it is noticed.
- **Lentigo maligna (melanoma):**
  - most commonly occurs in old patients, especially from a preexisting mole.
- **Acral lentiginous melanoma**.

Criteria that suggest a melanoma from a mole: (and consensually suggest excision)

1. **Color**: focal shades with red, blue, white or **darkening in color**.
2. **Size**: recent **rapid** diameter enlargement of **more than 10 mm**.
3. **Shape**: **irregular** margin, notching and indentation.
4. **Surface**: **ulceration**, bleeding, crusting, irregular elevation.
5. **Symptoms**: **pruritus, inflammation and pain**.
6. **Location**: **BANS*** area:
   - **Back**,
   - Posterolateral part of the **Arm, Neck** and **Scalp**.

*** They are the anatomical areas that have a higher risk rate and a lesser survival rate, because they are areas that are not usually seen by the patient, so are discovered late in advanced stage.**



Staging (Clark's Classification):

- Based on the histologic level of invasion of the tumor.
- Performed after excisional biopsy.

LEVEL	FEATURE	MORTALITY RATE
I	**In situ**; above basement membrane (confined to the epidermis)	**0%**
II	Invades the papillary layer of the **dermis**	**4%**
III	Lesions reach the **junction of the papillary and reticular layers**	**33%**
IV	Lesions invades the **reticular dermis**	**61%**
V	Lesion invades **subcutaneous tissue**	**78%**

Lymph Nodes Dissection:

- **Advised prophylactically as:**
  - **Level I and II : no need** of dissection.
  - **Level III :** some will do it and some will not.
  - **Level IV and V :** dissection is **mandatory**.
- **Not advisable in:**
  - **If lymphatic drainage goes to more than one area**. (e.g. if there's a melanoma involving the breast, you can't simply excise all of the lymphatic groups!)
  - Patients **over 70 years** old.
  - **Serious concurrent disease**.
  - **Unresectable distant metastasis**.

Prognosis:

- Depends on the **tumor size and depth of invasion**.
- **Less than 2 cm in diameter and less than 0.7 mm in depth is curable by wide local excision**.
- **Nodular melanoma** with ulceration has a **poor prognosis**.
- Lesions in the extremities have a better prognosis than trunk lesions. (because extremities can be amputated in the worst case, but we can't amputate the trunk ☺)
- **Women have a better 5 years survival** rate than men.

Non-Surgical Treatment: (Immunotherapy)

- **Small metastatic lesions treated with BCG** may be tried on healthy patients. (not large lesions)
- **Melanoma is radio-resistant**; so radiotherapy is rarely used in treatment, but may be used in palliation.
- **Chemotherapy with phenylalanine and alanine-mustard** and other drugs.
- **Survival is better in limbs** because a limb can be isolated and treated
- **Long-term palliative treatment of large lesions, which underwent surgery, is with radiotherapy and chemotherapy.**

Summary

	Heamangiomas	Basal cell carcinoma	Squamous cell carcinoma	Malignant Melanoma
General Characteristics	**commonest benign tumor of infancy**	Slow growing and **painless,** Locally invasive **and very rare to metastasize**	Rapidly growing, widely invasive with metastasis	Rarest but causing 2/3 of deaths from skin cancer, 1/3 arise from previous nevi
Sub-Types	1. Involuting • Superficial • Deep • Combined 2. Non-Involuting 3. Port wine stain	**1-Erythernatous (superficial)** **2. Pigmented** **3. Nodular** **4. Cystic** **5-Sclerosing Morphia**	Surface may be: **1-flat** **2-verrucose** (like a wart) **3-ulcerative**	**Types of nevi:** **1.Junctional nevi: More likely** to be malignant **2.Intradermal nevi: Less likely** to become malignant. **3.Dysplastic nevi: premalignant**
Hx	• Involuting: **first 2-3 weeks after birth,** and grows rapidly for 4-6 months. Then disappears at the age of 5-7 years. • Non-Involuting: **no rapid growth** • Port wine stain: along **sensory branches of the 5th nerve**	Fair skinned people, **exposure to UV light through sunlight**	**dark skinned people**, contact with hydrocarbons, ionizing radiation, Marjolin's ulcer	**UV radiation is the main risk factor, in addition to family history.**
PEx		Small translucent, skin elevated nodule with rolled pearly edges, Tetangiectatic vessels may occur on the surface, Flat and white or waxy appearance with firm palpation	Most common sites are the face and neck, starts as an erythematous plaque or nodules with indistinct margins	Nevi that getting darker, increase size, irregular shape, surface ulcerating, with inflammation and pain should suspect malignant melanoma transformation
Treatment	• Involuting: **regress on its own** • Non-Involuting: **not satisfactory** • Port wine stain: Laser is best	Surgical Excision with **safety margin of 2-3 mm**	Surgical Excision with **safety margin of 4-5 cm**	Surgical excision. Consider immunotherapy

MCQs

1)According to Clark's classification invasion of papillary layer in malignant melanoma is:

a. Clark 1
b. Clark 2
c. Clark 3
d. Clark 4
e. Clark 5

2)Basal cell Carcinoma:

A. Metastasis is usually to Lymph nodes before systemic Metastasis
B. Metastasis is usually systemic before lymph nodes Metastasis
C. Metastasis is usually to both lymph nodes and systemic Metastasis at the same time
D. Metastasis is usually to skin as " Satellite " Lisions
E. Does not develop Metastasis

3)Patients with Gorlin Syndrome are known to develop:

A. Basal Cell Carcinoma
B. Melanoma
C. Squanous Cell Carcinoma
D. Bowen's disease lesions
E. Dysplastic nervi

4) Squanous Cell Carcinoma of the skin:

a. Is Radio Sensitive
b. Is best treated by Chemotherapy
c. Surgery is done with 5cm skin margin
d. Usually seen in children
e. Its Metastasis is usually systemic before lymph node metastasis

MCQs

5)Melanoma:

a. Nodular melanoma has a better prognosis than all other types
b. Acrol Melanoma is known to have the best prognosis
c. Is Radio sensitive
d. Usually develops metastasis to lymph nodes before systemic metastasis
e. Is more common is black populations

6)A melanoma with Clark level II:

a. Reaches the epidermis
b. Reaches the Basal layer
c. Reaches the Reticular Dermis
d. Reaches Junction of Reticular and papillary dermis
e. Reaches the papillary Dermis

7)Majolin's ulcer:

a. Is a type of basal cell carcinoma
b. Is a type of squamous cell carcinoma
c. Is a type of Melonama
d. Is a type of ulcer is a blue nervus
e. Is a type of an ulcer in a dysplastic nervus

8. Strawberry hemangioma in a newborn in the cheek:

a. Best treated by surgical excision
b. Best treated by steroid injection
c. Best managed by observation for 4-5 years
d. None of the above
e. All of the above

1:b, 2:e, 3:a, 4:a, 5:d, 6:e, 7:b, 8:c.

Thank You..

Done By :

Nawal Asiri

Faisal S. AlGhamdi

Revised By:

Faisal S. AlGhamdi

surgery433@gmail.com