Pathology of the skin

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Histology of the skin

Epidermis: Stratum corneum Stratum granulosum Stratum spinosum Stratum basale

Dermis: papillary and reticular layers

Dermoepidermal junction

Definitions of microscopic terms

- **Hyperkeratosis**: Thickening of the stratum corneum, often associated with a qualitative abnormality of the keratin
- Parakeratosis: Keratinization with retained nuclei in the stratum corneum
- **Dyskeratosis**: Abnormal, premature keratinization within cells below the stratum granulosum
- Acanthosis: Diffuse epidermal hyperplasia
- **Papillomatosis**: Surface elevation caused by hyperplasia and elongation of contiguous dermal papillae

Seborrheic keratoses

Benign, epidermal tumor Macroscopic features:

- Size: mm up to several cms
- Round, verrucous lesion
- Velvety or granular surface
- Brown colour due to melanin

- Leser-Trélat sign: sudden onset of numerous seborrheic keratoses may indicate an underlying malignant visceral neoplasm
- (paraneoplastic syndrome!)



Basal cell carcinoma – Krompecher-tumor

- Semimalignant: Locally infiltrative, but never gives distant metastasis
- Pearly papule
- Dilated subepidermal blood vessels
- Can contain melanin (ddg: melanocytic naevus or melanoma malignum)
- Surface is often ulcerated
- May cause local bone destruction



Growth: multifocal or nodular

Tumor cells resemble the normal basal cell layer of the epidermis

Microscopic features

Infiltration of the dermis, the tumor mass is connected to the epidermis. (surface may be ulcerated)

Retraction artefact

Peripheral palisading



Squamous cell carcinoma

- Precursor lesion (facultative precancerosis): actinic keratosis (solarkeratosis)
- In situ ~: well circumscribed, red, scaling plaques
- More advanced lesions: hyperkeratotic nodule, surface may be ulcerated

Squamous cell carcinoma - microscopy

- In situ carcinoma: cytologic atypia is seen in all levels of the epidermis (dysplastic epidermis)
- Epidermis is disorganized, loss of normal cell orientation
- Invasive carcinoma: tumor cells invade through the basement membrane
- Shows variable degrees of differentiation:
 - Well differentiated: polygonal cells arranged in orderly lobules, large areas of keratinization
 - Poorly differentiated: anaplastic cells, geographic necrosis, dyskeratosis (single-cell keratinization)

Variants of melanocytic nevi

- Lentigo solaris
- Lentigo simplex
- Congenital melanocytic nevi (pl. Tierfell-naevus)
- Acquired melanocytic nevus
- Dysplastic nevus
- Spitz-nevus
- Reed-nevus
- Blue nevus

Pigmented nevi

Lesions arise from the dermoepidermal junction.

- *Junctional nevus*: consists of aggregates or nests of round nevus cells that grow along the dermoepidermal junction
- *Compound nevus*: nevus grows into the underlying dermis as nests or cords of cells
- Intradermal nevus: Epidermal nests are lost entirely



The lesion is symmetric.

Superfitial dermis: nest formation, melanin secretion, larger cells



Intradermal nevus microscopy

Cells show signs of maturation

Deeper dermis: Confluent cords of smaller cells and dispersed cell population.



Melanoma malignum (MM)

- Mostly arises de novo. (~75% from normal skin, 25% from preexisting nevus)
- Mostly arises in the skin, other sites of origin include oral and anogenital mucosal surfaces, esophagus, and also can be intraocular and conjunctival
- Distant metastases can occur anywhere, liver is usually affected
- Prevention: Avoiding sunburn and overuse of tanning devices, regular use of UV protection







ABCDE rule

Suspicion of malignancy, if the lesion is:

- Asymmetric
- Border: irregular
- Colour: unevenly and variably pigmented
- Diameter: >6 mm
- Enlarging or Evolving

Melanoma malignum

- Severe cellular atypia (e.g. eosinophilic nucleolus), dermal mitoses
- Radial/horizontal growth:
 - Radial: horizontal spreading early stage, intraepidermal or superficial dermal growth (usually associated with low risk of metastasis)
- Vertical phase: tumor cells invade downward into the deeper derma Nayers

Types of melanoma:

- SSM: superficial spreading melanoma
- Lentigo maligna
- Nodular melanoma
- Acral lentiginosus melanoma

The lesion is asymmetric.

Breslow thickness:

distance of the epidermal granular cell layer above the tumor cells and the deepest layer of the tumor in mm

Clark scale of invasion Clark I: in situ melanoma Clark II-III-IV: dermal levels Clark V: subcutaneous tissues



Tumor cells look similar in the superficial and deeper layers, they do not show signs of maturation.

Dysplastic nevus

- In sporadic forms the behavior is benign, but macroscopic appearance is worrisome
- Larger than most acquired nevi (>5mm), irregular border
- Microscopically these nevi show random cellular atypia and/or structural irregularities
- Can be part of dysplastic nevus syndrome