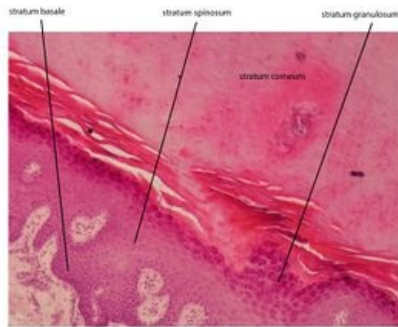


Epithelial tumors

Epithelial tumors arise either from superficial epithelium (squamous or urothelium) or from glandular epithelium (various endothelial and external secretory glands).



Layered squamous corneal epithelium

Epithelial tumors include:

- papillomas - benign tumors of the superficial epithelium
- adenomas - benign glandular tumors
- carcinomas - malignant tumors of the superficial epithelium
- adenocarcinomas - malignant glandular tumors

Macroscopic appearance

Benign epithelial tumors grow in *the superficial localization* and have a broadly sessile or polypoid shape. Polyp is a pathological mucosal growth. Carcinomas often progress to invasive growth in the environment. Necrosis and ulceration occur at the center of the cancer. The tumor has the appearance of a crater with bulging edges that grow into the surroundings.

In *the organs*, benign epithelial tumors are mainly represented by benign adenomas, which most often have a round shape, grow expansively and do not penetrate into the surrounding structures. These benign adenomas put pressure on other tissues, so pressure atrophy can occur. Sometimes a benign tumor is encapsulated by a fibrous sheath, which sharply demarcates the tumor from the surroundings. The cancers are invasive in growth and penetrate the surrounding tissues through finger-like protrusions. Carcinomas are irregular, lobed or conical in shape.

Microscopic appearance

Epithelial tumors retain the properties of the epithelium from which they originated to varying degrees. Tumor cells are held together by intercellular junctions. Benign tumors retain *polarization* - the basal part is inclined to the stroma, opposite to the surface. In cancers, cell polarity and cohesion of epithelial structures are lost.

Spread of cancers

Epithelial carcinomas spread in several ways. Some cancers spread by local growth (*per continuity*). Another possibility is perigenic spread, when there is an expansion spread after serosa, which is called carcinosis (multiple small granular deposits are formed and serosa fibrotizes). Some cancers spread in the perineuria of the nerves. Furthermore, lymphogenic spread is also possible, which is usually preceded by hematogenous spread. Hematogenous spread is most common to the lungs, liver and bones (bone destruction often occurs).

The first metastases are detected in the regional lymph nodes, which can be surgically removed. The greatest risk of metastasis is in the first lymph node above the tumor, which is referred to as the sentinel node.

Superficial epithelial tumors

Squamous papilloma

Squamous cell papilloma is a relatively common tumor and is located mainly on mucous membranes covered by squamous epithelium (an example is the oral cavity). Papillomas can be multiple, then this condition is called papillomatosis. Microscopically, papillomas are formed by finger-shaped protrusions (papillae), which have a vascular tree in the center and are covered with squamous epithelium on the surface. Sometimes we can see signs of HPV infection in the epithelial cells. Human papillomavirus attacks epidermal stem cells and causes cervical cancer. In the case of HPV infection, we observe hyperchromatic nuclei in the cells, around which there is a strikingly contrasting perinuclear illumination of the appearance of the cavities - *koilocytosis*.

Papillomas can corrode on the surface. We distinguish between *hyperkeratosis*, when a large layer of eosinophilic mass is formed on the epithelial surface, and *parakeratosis*, when we are able to observe the remnants of basophilic nuclei in the eosinophilic horn.

According to the macroscopic appearance we distinguish:

- *soft papillomas* - contain poor trees, are soft and fringed in appearance, for example in the oral cavity

- *fibroepithelial papillomas* - they have denser trees, are stiff and have a cauliflower appearance, located on the vocal cords, for example
- *exophytic papillomas* - solid formations with a hard crust (due to horning), when whitish they have a whitish appearance
- *inverted papillomas* - they are inversely immersed in the stroma (the appearance of the glove upside down), an example is the sinonasal papilloma

Squamous cell carcinoma

Squamous cell carcinoma occurs where the squamous epithelium is normally present (skin, oral mucosa, pharynx, esophagus, genitalia, etc.). However, it can also occur elsewhere and then we talk about *squamous metaplasia*, which occurs, for example, in the distal endocervix or airways of smokers. Squamous cell carcinoma spreads mainly lymphogenically to regional lymph nodes. Later, there is also hematogenous spread, mainly to the lungs.

Microscopically, it is often very similar to non-tumor squamous epithelium. In some places, we observe maturation to the surface layers with visible stratum spinosum (therefore it is also referred to as *squamous cell carcinoma* or *spinoma*). We observe typical intercellular junctions in which the cells have a *thorny appearance* (spin). At the surface, the tumor cells flatten, are eosinophilic, and may corrode. In the carcinoma, the papillae inverse and tumor pins form (the surface layer is in the center of the pin). If cornering occurs in the center of the pin, the keratin layers are closed here and concentrically layered bulbs with an onion appearance are formed in the center of the pin, this formation is referred to as a *corner pearl*. Sometimes the cornea occurs only in individual cells, which we call monocellular cornea.

Basal cell carcinoma (basal cell carcinoma)

Basal cell carcinoma is a locally destructive malignant tumor. It is the most common malignant skin tumor. It is unable to metastasize and grows slowly. It does not occur in the mucous membranes, it occurs mainly on the skin that is irradiated by the sun (forehead, nose, ears, face). They usually do not endanger the patient's life, they can be surgically removed.

Macroscopically, basal cell carcinomas begin as flat and nodular infiltrates of the skin, without horns. Over time, the tumor develops ulceration with swollen margins, which gradually expands as the tumor grows. Ulcus rodens (gnawing ulcer) typically develops.

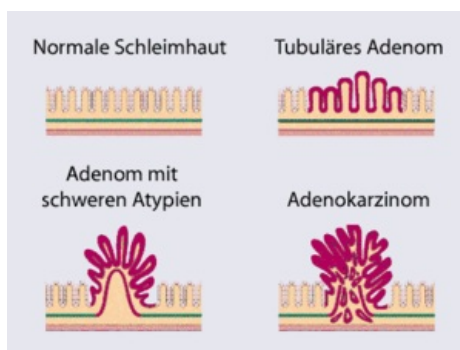
Microscopically, unlike squamous cell carcinoma, it is less mature. Basal cell carcinoma grows mainly endophytically, in the dermis and subcutaneous tissue it forms *invasively growing pins*, which are formed by basal cells. The cells have oval basophilic nuclei that are close together, without intercellular junctions. There is no horning, palisade tumor cells form on the periphery of the pins.

Urothelial tumors

Urothelial tumors are tumors in the urinary tract (they occur mainly in the bladder). Most tumors have a *papillary character*, but there are also flat lesions. Benign tumors are urothelial papillomas and are extremely rare. Non-invasive papillary urothelial carcinoma often occurs, which tends to recur (it can transform into invasive carcinoma).

Glandular epithelial tumors

Adenomas



Adenoma

Adenomas have a macroscopically different appearance. Mucosal adenomas have exophytic growth and the appearance of polypoid tumors (broadly sessile, stalked). Adenomas located in the depths of the organs are mostly spherical and encapsulated. Cystic adenomas can contain serous or mucinous cysts.

Adenomas are tumors without invasive growth and often retain the glandular structure of the organ from which they originate. The most common structure is *tubular* (tumor cells correspond to physiological glandular structures). *Follicular* adenomas (such as in the thyroid or pituitary gland) also occur. If the tumor cell does not form a lumen, then the tumors are *solid*. We distinguish between solid *alveolar* (adrenal cortex adenoma) or *trabecular* (liver adenoma).

Adenomas are capable of secreting mucus or secreting serous secretions. Adenomas of the endocrine glands often retain the ability to produce the hormone and can cause it to overproduce. An example is parathyroid adenoma, which can cause hyperparathyroidism.

Adenocarcinomas

Adenocarcinomas have a different macroscopic appearance - exophytic, cup-shaped with ulceration, flat, diffuse. In the stroma we find large mucus lakes, which are formed by extracellular mucus formation. The stroma also contains *annular cells* (sealing ring cells), which are characterized by a large vacuole with mucus.

- *medullary carcinomas* - contain few tumor cells in the stroma and are therefore soft
- *skirhus* - they have stroma with a large number of cancer cells, they are hard
- *mucinous (gelatinous) carcinomas* - contain a large amount of mucus

According to the microscopic appearance, we divide adenocarcinomas:

- *cribriform* - they are formed by the merging of tubules, between which the trees disappear (tumor islands form)
- *solid* - dedifferentiation occurs, the ability to luminize disappears, the tumor grows in solid irregular pins
- *dissociated* - cells lose cohesion, cells lose polarity and have a rounded shape

Links

Related articles

- Tumor
- HPV
- Epithelium

References

- ZÁMEČNÍK, Josef, et al. *Patologie I*. 1. vydání. Praha : Nakladatelství LD, s.r.o. - PRAGER PUBLISHING, 2019. ISBN 978-80-270-6457-1.
- POVÝŠIL, Ctibor, Ivo ŠTEINER a Pavel DUŠEK, et al. *Special pathology*. 2. edition. Praha : Galén, 2007. ISBN 978-807262-494-2.
- STRÍTESKÝ, Jan. *Patologie*. 1. edition. 2001. ISBN 80-86297-06-3.