ADNEXAL MALIGNANT TUMORS OF THE SKIN

VIRGIL PĂTRAȘCU, RODICA TASLÎCA, BIANCA ADELA CISMARU-IANCU

Summary

Adnexal malignant tumors are neoplasm originated in the adnexal skin structures (glands, hair follicles) and can develop on previously healthy skin, but usually they appear due to the malignization of different varieties of benign tumors. They represent a special chapter in oncological dermatology. These tumors are rare, well individualized, with a diagnosis sustained only on histopathological exam and immunohistochemistry. They have no distinctive clinical feature, which can make even an experimented phisician miss the diagnosis, after performing only a clinical exam. Adnexal malignant tumors are represented by: malignant tumors of the sebaceous glands; malignant tumors with appocrine and eccrine differentiation; malignant tumors with follicular differentiation. These groups include multiple entities, for each being presented the clinico-evolutive particularities, histopathological aspects, immunohistochimical and therapeutical conduit.

***Key words**: adnexal carcinomas; histopathological exam; immunohistochimical investigations; treatment.*

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Adnexal malignant tumors are types of neoplasms that have the origins in the adnexal structures of the skin (glands, hair follicles) and they can develop on previously healthy skin. Most frequently, they come from the malignization of previously benign tumors. [1,2]

I. Malignant tumors of the sebaceous glands

Sebaceous adenocarcinoma (carcinoma of the sebaceous glands) is a very rare tumor, with a frequency of 0,2% of the cutaneous carcinomas. They are mainly localized on the face (especially eyelids) and scalp. [3]

The clinical aspect is represented by a solitary nodular tumor, with smooth, translucid surface, pink or yellow-brown colored. The tumor usually had 1 cm diameter, can be polylobate and can present ulcerations on the surface. On the section surface, the color is yellow, sometimes sprinkled with small cysts that eliminate a coarse, yellow-grey material. This type of tumor, if present in Muir-Torre syndrome, can be associated with other visceral neoplasms. [4]

The tumor evolution is local, infiltrative and destructive, but it can also present in a metastasized form. Sebaceous carcinoma rarely metastasizes, with an incidence of 14% and this phenomenon occurs late in the evolution. [5,6]

A particular aspect is represented by the Meibomius glands adenocarcinoma, situated in the eyelids, which represents the most frequent localization of the sebaceous carcinomas.

Histopathologically, the tumors are made of cells with a morphology that resembles the one of the sebaceous glands, situated in the center of the tumoral lobules. The tumors also contain non-differentiated carcinomatous cells, situated mostly at the periphery of the tumoral lobules.

Immunohistochemistry shows an immune profile of the neoplastic cells resembling the cells within the benign sebaceous tumors (positive

* Dermatology Department, University of Medicine and Pharmacy of Craiova, Romania.

for high molecular weight cytokeratins, EMA, C15/Leu M1). [7]

The treatment is represented by surgical excision with safety margins, complete excision before metastasis ensuring a high survival rate. [5,6]

II. Malignant tumors with apocrine and eccrine differentiation

This type of tumor is more frequent than the one developed from the adnexal structures of the skin. This type contains the next entities:

1. **Adnexal microcystic carcinoma** (sclerosing sweat duct carcinoma, eccrine epithelioma, syringomatous carcinoma) is a well differentiated adenocarcinoma, with low metastasis capacity. [8]

Clinically, the tumor is located on the face, usually affects adults, women more frequently and has a slow growth, over a period of months or even years. [9]

The classical histopathological aspect is represented by solid or small cystic structures, situated superficially, resembling the infundibular ducts or cysts. In the central area, the tumor is made of small ductal structures, with frequent neural and perineural involvement. In the deepest areas where the tumor is infiltrated, the cells are arranged in "Indian line" within a sclerous stroma. This appearance gives the tumor a specific aspect of layered lesion: in the superficial area, it has a cystic and tubular aspect, while the depths of the tumor are mainly made of cell cords and sclerosis. Sometimes it can present sebocytic areas, while other times it can present with areas resembling the follicular sheath. This suggests that it can have differentiation towards the follicular-sebaceous-apocrine unity. In some cases, the lesion is exclusively ductal, which has determined some authors to call it syringomatous carcinoma or sclerosing sweat duct carcinoma. [8,9] Some tumors present poromatous or clear-cell aspects. Cytologically, the lesions are well differentiated, without nuclear pleiomorphism or mitotic figures. Actually, the nuclear pleiomorphism must be taken in consideration when the microcystic carcinoma diagnosis is correct.

The tumor is positive for AE1/AE3, CK7 and Bcl-2, EMA and BerEP4. Alpha SMA and S100 are positive in the tubular periphery. P53 is positive in less than 25% of the neoplastic cells. There is a proliferations index which is less than 5% positive for Ki67 in the neoplastic cells, while CK20, C-erb and CD34 are negative. [1,2,8]

The treatment is surgical excision with oncological safety margins. Radiotherapy has rarely lead to success. In some cases, there has been observed a slightly increased aggression of the tumor after radiotherapy. [9]

2. **Mixt malignant tumor (MMT)** is an extremely rare skin adnexal tumor with an aggressive local behavior and a high metastasis potential. Also known as mixt malignant apocrine tumor or malignant chondroid syringoma, mixt malignant tumor is considered the malignant correspondent for mixt benign tumors, although the histological diagnosis is based in the first place in the biphasic character of the neoplasia, rather than on a combination of benign tumoral debris with carcinomatous tissue. [1, 10]

This tumor can appear at any age (15 months-89 years) and is twice more frequent in women than men. Compared to the corresponding benign form, the malignant one presents predilection for the trunk and extremities, especially hands and feet.

Clinically, most MMT are circumscripted and may appear cystic, and in the moment of the medical examination, most of them are 2-15 cm diameter. They are not painful or ulcerated and have no distinctive clinical aspect. They rarely have a rapid growth, with ulcerations or pain. The section surface of the tumor can reveal a gelatinous material in variable quantity. Because of the infiltrative growth, the tumor enucleation is not possible.

Histopathologically, MMT develops in the dermis and sub dermis and is presented as a large, asymmetrical tumor, poorly circumscripted, biphasic, lobulated, with infiltrative margins and adjacent satellite tumoral nodules. Rarely, the tumor can present juxtapositions of benign and malignant areas. MMT is made of two components: epithelial and mesenchymal, the epithelial component is situated in the periphery, while the mesenchymal one is situated in the center. The tumoral chondromyxoid stroma is

PAS negative, being mainly made of hyaluronic acid and acid mucopolysaccharides. Rarely, the stroma can turn to bone. The epithelial cellular aggregates can present like confluent cords and cellular nests with variable shapes and sizes, mixed with tubular aspect areas. The tubular structures can be paved with at least two layers of epithelial cells, the ones close to the lumenum are similar to the cells with apocrine secretion, and the perilumenal ones, present plasmocytic or myoepithelial differentiation. [1,11]

The tumoral cells can present myoepithelial immunophenotype with expression for S100 and CK, including actine in some cells. Spindle cells from the area with myxoid stroma are positive for Vimentin.

MMT proliferate in an invasive and destructive way, with a high local recurrence rate and metastasis (over 50%) in local and regional lymph nodes, lungs and bones. Death occurs in more than 25% of the cases. Still, in over 30% of the cases, there is no recurrence or metastasis (atypical mix skin tumor). Generally, MMT has a prolonged evolution. Complete excision before metastasis had a survival rate of 100%. [10,11]

3. **Eccrine porocarcinoma** (eccrine carcinoma, malignant eccrine poroma, malignant hidroacanthoma simplex, malignant intraepidermal eccrine poroma, poroepithelioma) is a malignant tumor originating in the eccrine glands ducts. It has both intraepidermal and dermal component. The tumor was first described by Pinkus and Mehregan in 1963. [12]

Eccrine porocarcinoma is a rare tumor, predominantly affecting old people. The age of onset is 67 years. Men and women are equally affected. Porocarcinoma can develop "de novo" or through malignant transformation of a preexisting eccrine poroma, hidroacanthoma simplex or it can be associated with a sebaceous nevus. Almost 50% of porocarcinomas are associated with a preexisting eccrine poroma. In 44-50% of the cases, it is localized on inferior limbs or buttocks, 24% are placed on the trunk and only 18% on the head and face. The upper limbs are rarely affected. [13]

Clinically, porocarcinoma is presented like a nodular or ulcerated verrucous lesion. It can resemble an eccrine poroma, verruca vulgaris, seborrheic keratosis, nevus, fibroma, basal cell carcinoma, squamous cell carcinoma or pyogenic granuloma. The diagnosis is histopathological. [12,13]

Histopathologically, porocarcinoma forms nests and cords made of epithelial cells with pale cytoplasm. Tumoral masses are well delimited, frequently round, with polygonal cells that contain pleomorphic nuclei and irregular, prominent nucleoli and numerous mitotic figures. These is a clear delimitation between the cellular nests and the adjacent epidermal keratinocytes. The epidermis can be acanthotic. Both isolated cells and cellular nests can invade the epidermis, in a pagetoid way. Keratinization is usually absent. Intercellular bridges within the tumoral cells are invisible. Their connection with the intraepidermal eccrine ducts can be observed, but the intralimphatic invasion of the profound dermis can also be observed in 15% of the cases. The differential diagnosis includes: eccrine poroma, hidroacanthoma simplex, Paget disease. Eccrine poroma and hidroacanthoma simplex can be atypical, but the lesions are symmetrical and well circumscripted. Porocarcinoma is differentiated from Paget disease through the fact that the intraepidermal implication is rare, and the dermis is more frequently affected. Another difference between those two is the number of glycogen rich cells, compared to the mucine in Paget cells. In the absence of an eccrine poroma, residual porocarcinoma is hard to distinguish form squamous cell carcinoma.

Tumoral cells are positive for a panel of antibodies anti pan CK, but they are paler, compared to the adjacent epidermal keratinocytes. The ductal structures from the interior of the tumor are strongly positive for CEA and EMA. [1,14]

Approximately 20% of the porocarcinomas recidivate after excision. The regional lymph nodes are invaded in 20% of the cases, while 12% of the cases develop distance metastasis. The patients with metastatic disease have a high mortality rate. The high number of mitoses, the lymph node invasion and a tumoral depth bigger than 7 mm are associated with a bad prognosis. [1, 12, 13]

4. **Spiradenocarcinoma** is an adnexal malignant tumor that results from the malignant transformation of a benign spiradenoma. [2]

Spiradenoma is an extremely rare tumor that mainly affects medium age individuals. The incidence is equal for both sexes. Spiradenocarcinoma can affect any body region, but mostly frequently it is located on the upper extremities, followed by low extremities, trunk, head and neck. [2,15]

Clinically, there is a long evolution period, in which the tumor grows, it ulcerates, becomes firm or it changes color. The tumor dimensions can variate between 0,8-10 cm. The time period in which the malignant tumor develops on a preexistent lesion is almost 20 years. The patient can have multiple spiradenomas that can coexist with cilindromas. [15,16]

Histologically, there are areas with spiradenomas that contain well delimited dermic nodules made of two types of cells. Spiradenocarcinoma develops on a spiradernoma and is made of two major histopathological types. In one type, there are areas with a gradual variation from the benign to the malignant form. In these lesions, the dual cell population of the benign form goes imperceptible to the monomorphic malignant cell population. The common aspect of the spiradenoma disappears and it is replaced by less defined nests and cell cords. The glandular and glandular-like structures and hyaline globes are rarefied or totally missing. These transformations can be focal in early lesions and can disappear during the evolution of the tumor. In the second histopathological type, malignant transformations are adjacent to the spiradenoma area, without structural or cytological transition. This neoplasm can present with a broad spectre of histopathological aspects, including squamous, bowenoid, ductal carcinoma-like, histiocytic-like and carcinosarcomatous-like modifications with rhabdomyoblastic or osteosarcomatous differentiation. In late stages of the two subtypes, necrosis, bleeding and infiltrative growth can be observed.

Spiradenocarcinoma is positive for the majority of the CK, CEA, EMA and presents a "stained" reaction for S100 protein. The p53 super expression have also been observed.

Spiradenocarcinoma is an aggressive tumor, with multiple local recurrences and sometimes metastases. Usually, metastases affect lymph nodes, bones and lungs. The treatment is usually surgical. [2,16]

5. **Hidradenocarcinoma simplex** (papillary carcinoma with clear cells, clear cells hidradenocarcinoma, clear cells malignant acrospiroma, mucoepidermoid hidradenoma) is the malignant variant of hidradenoma.

Hidradenocarcinoma is a tumor that frequently affects women aged 50, but there have been cases described in children. Many of the hidradenocarcinoma cases appear "de novo", but some are associated with hidradenoma. This can be localized in any body region.

Clinically, the tumor doesn't have characteristic features and it usually has slow growth under the form of a solitary dermic or sub dermal nodule. [2, 17]

Histopathologically, hidradenocarcinoma is made of one or more tumoral nodules with variable size and shape and they present focal ductal or tubular structures. Areas of necrosis may be observed. Usually, the tumor has no connection with the epidermis, but the coverage epithelium may be ulcerated. The tumor is made of the same cell type as the hidradenoma, but this presents atypical features, with pleomorphic nuclei and many mitoses. Still, the nuclear atypia may be missing in some cases, this is the reason why the diagnosis is made on the architectural aspect.

Neoplastic cells express positivity for low molecular weight cytokeratins like CAM 5.2, CK 19. CEA and EMA are positive on the lumenal margin of the ductal structures.

This type of carcinoma can present with long-distance metastases. [17]

6. **Mucinous carcinoma (MC)** is a rare skin tumor that usually affects middle-aged or old people, more frequently men. Although it is characterized by destructive local growth and high metastasis potential, it sometimes had indolent evolution with local recurrences. Metastatic mucinous skin carcinoma, with origin in different organs (particularly breast and gastrointestinal tract) is hard to differentiate histopathologically from primary mucinous skin carcinoma. Most mucinous carcinomas are solitary tumors with slow growth, accompanied by pain and are predominantly located on the face and scalp, with predilection for the eyelids.

Rarely, the trunk, axilla, lower extremities, perineum and vulva can be affected. [2, 18]

Clinically, the tumor can be light brown or reddish, with smooth surface and soft or firm consistency. Most MCs are well circumscripted, unencapsulated and are localized in the dermis or sub dermal. The tumor diameter can reach 1-8 cm, although there have been described larger tumors. During the excision, one can observe that the tumor is fixed to the subjacent tissue and the surface is gelatinous.

Histopathologically, MC presents itself as an asymmetrical unencapsulated tumor. It has subcutaneous extension and can also affect profound subjacent tissues. Satellite tumors can appear far from the primary tumor. The tumor aspect is of mucine lakes separated by fibrous septs, creating a honey comb aspect. In the mucine lakes float small isles or bizarre nests of epithelial neoplastic cells. The epithelial component is dense in the tumor periphery. The small glandular or tubular structures that contain mucine or that present signs of apocrine secretion appear very rare. The neoplastic cells are cuboid, round or oval with abundant vacuolized cytoplasm. The nuclei are small with a slight atypia, the mitoses are rare.

The neoplastic cells express positivity for high molecular weight CK, CEA, EMA, GCDFP15, alpha-lactalbumin, salivary amylase and beta 2 macroglobulin. The expression of S100 is unsteady. CK 20 can differentiate metastatic gastrointestinal carcinoma from cutaneous mucinous carcinoma, for which this is negative. Variants of MC rarely present neuroendocrine differentiation or growth pattern that simulates infiltrative breast cancer. Histological differentiation between primary MC and the metastatic may be impossible, although the last one presents subtle histological variants (large nests of cohesive neoplastic cells, less mucine, the absence of fibrous septs that surround the mucine lakes). The characteristic honey-comb aspect of the MC is absent. The MC histogenesis isn't fully understood, but the is a strong morphological evidence that supports the apocrine origin. [2]

MC is a malignant tumor with a low malignancy risk, with tendency to persist at the origin and low metastasis potential. Approximately 10% of the MCs present with lymph node metastases and only 3% present with long-distance metastases. There are multiple recurrences because of the satellite tumors, but death due to MC is exceptional [18, 19]

7. **Digital papillary carcinoma** (aggressive digital papillary adenocarcinoma, digital papillary adenocarcinoma) is considered an unusual adnexal malignant tumor, with reccurence and metastasis potential. Historically, this groups of tumors has been spread in two categories: aggressive digital papillary adenocarcinoma and digital adenocarcinoma. Initially, cases have been classified as adenomas that develop metastases, demonstrating that the histological parametres don't show accurately the predictive behaviour. [2, 20]

Digital papillary carcinoma always appears on the fingers and toes, palms and soles. Hands are more frequently affected, comapred to soles. There is a predominance for the male gender and the disease usually affects adults in the 5th and 6th decade of their life. Many cases present with a nodule localised on the finger, with slow and deep growth. The lesion can have a few centimetres diameter. The pain is occasional and may be connected more to the tumoral extension to the bone or nerves. Rarely, the metastasis is the first manifestation of the disease.

Histopathologically, the tumor is made of multinodular epitheloid aggregates localized in the dermis, with cystic spaces. A cribriform pattern of the glands often appears in the solid areas of the tumor and the papillary projections appear in the cystic spaces. The papillary projections are associated with fibrovascular axes in some areas, while in other areas the papiles are made of protrusioned epithelium without stromal support. The epithelium is made of cuboid and columnar cells. The cysts contain necrotic debris or eosinophilic secreting material. Some tumor are well circumscripted, while other have an infiltrative growth pattern. The differential diagnosis includes papillary eccrine adenoma, which is usually well circumscripted and composed of dilated ducts with two rows of cells and delicate papiles. Malignant adnexal neoplasms, like malignant acrospiroma, malignant spiradenoma, are included in the differential diagnosis but don't have the typical papillary growth aspect or the "back to back" glands that

characterize the digital papillary carcinoma. Furthermore, malignant spiradenoma usually presents two cellular populations (small basal cells and small pale cells in the periphery) in the same nests.

The presence of the papillary carcinoma in the acral areas, where the eccrine glands are abundant, suggests the eccrine origin of these tumors. Still, some tumors present with "decapitated" secretion, phenomenon common in apocrine lesions, also observed in eccrine lesions. Furthermore, the immunoreactivity for feritine has led the investigators to the eccrine origin of the digital papillary carcinoma. [2]

The complete surgical excision with healthy margins is indicated, but sometimes amputation is necessary. Tumoral recurrences are observed in 50% of the cases, especially in the cases without complete primary resection. The metastatic disease had been reported in 14% of the cases. Metastases can accompany the recurrent disease or can appear without recurrence evidence. The lungs are the election place for long-distance metastases, suggesting that these take place through the hematogenous way. Recurrences and metastases are not correlated with the age of the patient, tumor dimensions or evolution duration. Neither do the histopathological aspect, tumoral differentiation or nuclear degree can predict the tumoral behavior. [21]

8. **Adenoid cystic carcinoma (ACC)** is a neoplasm with a controversed histogenesis, characterized by a cribriform growth and frequent neural implication. Approximately 40 cases have been described in literature, affecting middle aged and old people (age of onset 58.1 years), with a predilection for women. This neoplasm is more frequently located on the scalp (35%), thorax and abdomen (25%). [22]

Clinically, primary cutaneous adenoid cystic carcinoma had an indolent and progressive evolution, with a medium time frame of 9 years from the appearance of the tumor until it is diagnosed. The tumor sized variate between 0,5 and 8 cm, with a medium size of 3,2 cm. Patients present with ferm, skin-like nodules, with slow growth. Sensibility, ulceration and bleeding of the nodules is variable and depend on the affected area. The tumor localisation on the scalp can be associated with alopecia. [23]

Histopathologically, ACC is usually badly circumscripted and is made of isles and cords of basal cells with glandular, cystic, cribriform and tubular arrangement, surrounded by lax fibrous stroma, sometimes mucine. Neoplastic cells are usually localised in the middle and profound dermis, but can extend to the subcutaneous fat tissue. The epithelial cords have an infiltrative pattern and aren't connected with the epidermis. The tumor has a characteristic basophilic aspect due to nuclear hyperchromasia. The nuclear palisadic aspect is absent and the nests made of tumoral cells are surrounded by an eosinophilic hyaline material, which is PAS positive and diastase resistant. Cystic spaces usually contain abundant mucine, that is characteristically stained with alcian blue, at a 2.5 pH. The mitotic activity is reduced. Perineural extension, a characteristic aspect for ACC of the salivary glands, can be observed in cutaneous adenoid carcinoma. Before making a primary cutaneous ACC diagnosis, other tumoral metastases that resemble ACC must be excluded. Also, cystic adenoid basal cell carcinoma must be excluded. Primary cutaneous ACC presents positivity for EMA, CEA and low molecular weight cytokeratins. For S100 protein and vimentin, positivity is focal. Epithelial cells from the periphery on the tumoral isles can express positivity for actine. Eccrine or apocrine origin of this tumors remains disputed. [2]

The evolution of this tumor is slowly progressive and indolent. The recurrence rate is high, reaching 50-70%. That's why, a large excision of the tumor is recommended. There have been reported recurrences even in the case of safety excision margins of 2 cm, sometimes many years after excision. This is why Mohs surgery is preferred. [23]

9. **Apocrine carcinoma (AC)** (apocrine adenocarcinoma, apocrine glands carcinoma) is a malignant neoplasm of the sudoripary glands with apocrine differentiation.

AC is a rare tumor that affects both sexes equally, without racial predilection. Patients are over 25, this suggesting that the complete maturity of the apocrine glands is necessary. Most ACs develop in the axilla and, in a smaller number, in the ano-genital region. Rare lesions

may include scalp, face, trunk and distal upper extremities. Unusual variants have been described on the ear (cerumen glands carcinoma) and eyelids (Moll glands carcinoma). [2, 24]

As far as the clinical aspect is concerned, it is difficult to establish an AC profile, because the reports concerning these tumors are sporadic and can include a proportion of benign lesions. There is no distinctive clinical aspect that might allow a right diagnosis for AC. A lot of tumors are solitary, but there have been reported cases of axillar, bilateral AC. AC presents like solitary or multiple nodules, firm or cystic, reddish or violaceous with a diameter between 1.5 and 8 cm. Ulceration and bleeding of the lesion may appear. The age of onset is between 25 and 90 years, with an average of 57.9 years. In many cases, the lesions present with a history of 10 to 30 years before being diagnosed. Some tumors can develop on a sebaceous nevus. [25]

Histopathologically, AC is localized in the profound dermis and has a tendency to infiltrate the subcutaneous fat tissue. The extension towards the epidermis can also appear. The tumors are usually poorly circumscripted, with infiltrative margins, and the apocrine glands situated in the proximity of the tumor can present areas of in situ carcinoma. The growth pattern of this tumor is very variable, including tubular, cystic, micronodular or solid aspects. The cells have abundant eosinophilic cytoplasm, with specific, diastase resistant PAS positive granulations. A key diagnosis criteria is the presence of the "decapitated" secretion. The tumoral stroma is dense, fibroblastic or hyaline and can contain lymphoplasmocytic infiltrate.

Immunohistochemistry shows positivity for high molecular weight cytokeratins, EMA, CEA, CK 15, gross cystic disease fluid protein (GCDFP) and occasionally S100. [2, 25]

Most ACs are slow growth tumors with prolonged evolution. Mortality is low, in spite of frequent relapses (30%) and regional lymph nodes metastases (50%). Dissemination and death caused by the tumor have been described in literature. Distance metastasis is a late event, which is the reason why prolonged supervision of AC patients is recommended. [25]

III. Malignant tumors with follicular differentiation

1. **Pilomatrix carcinoma** is an extremely rare tumor that develops "de novo" or through the malignization of a preexistent pilomatrixoma. Most cases occur on adults, the average age of onset is 48 years, affecting both sexes, with a m: f sex ratio of 2:1. Most pilomatrix carcinomas are located on the head and neck, upper extremities and buttocks. Rarely, there have been reports of tumors located in the axilla or inguinal region. [26]

Clinically, this tumor does not present a distinctive aspect appearing as solitary nodules, occasionally ulcerated, with sizes ranging between 1 and 10 cm. It is considered that the ulceration of the benign variant has the significance of malignization. These nodules grow in a time period ranging from a few months to a few years, before establishing a diagnosis, although there have been situations in which these grow very rapidly. [27]

Histopathologically, the pilomatrix carcinoma presents itself like a mass of asymmetrical tumor cells, poorly circumscripted, located dermically or sub dermically. The tumoral cells have a basal cell aspect (matriceal or supramatriceal). Some tumors present desmoplastic stroma around basal cell aggregates. The cells present hyperchromatic nuclei with prominent nucleoli and a wide number of occasionally atypical mitoses.

Immunohistochemically, pilomatrix carcinoma is positive for high molecular weight cytokeratins. [2, 26]

The elected treatment is surgical excision with safety margins. Mohs surgery can be useful. Pilomatrix carcinoma presents mainly local aggressiveness with recurrence in the event in which the excision was not complete. Rarely presents distant metastases (bone, pulmonary). [27, 28]

2. **Trichilemmal carcinoma** is a neoplasm which develops from the external shield of the hair follicle, through the malignization of a trichilemmoma. It affects mostly the male gender, around the age of 40.

Clinically, it has the aspect of a solitary nodule, firm, red colored, which evolves in the

regions with abundant hair, especially on the cephalic extremity (scalp, eyebrows, beard). [29]

Histopathologically, we can notice an aspect of primary, secondary and tertiary hair follicles, the neoplastic cells presenting pleomorphism, nuclear atypia and atypical mitoses.

Immunohistochemically, it presents the same pattern as pillar tumors, being positive for high molecular weight CK. Also, the cells present intense staining for UEAI (Ulex Europaeus I Agglutinin).

The treatment is comprised of complete excision, with safety margins, for avoiding recurrence. Trichilemmal carcinoma which does not present atypical cytological aspects usually has a benign behavior. Tumors with an infiltrative growth pattern and cytological atypia have an unpredictable behavior (they can be locally aggressive, they can relapse and metastasize). [30]

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Conflict of interest
NONE DECLARED

Correspondance address: Virgil Pătrașcu
MD, PhD, University of Medicine and Pharmacy
Craiova, Petru Rares Street, No2-4, 200345, Craiova, Romania,
phone: 004-0724273676,
e-mail: vm.patrascu@gmail.com