

Case Report

Periocular Basal Cell Carcinoma

Furdova Alena^{1*}, Horkovicova Kristina¹, Krcova Ivana¹ and Ondrusova Martina²

¹Department of Ophthalmology, Comenius University, Slovakia

²St. Elisabeth College of Health and Social Work, Slovak Academy of Sciences, Slovakia

***Corresponding author**

Furdova Alena, Department of Ophthalmology, Medical School, Comenius University, Bratislava, Slovak Republic, Slovakia, Tel: 421-2-48234583; Email: alikafurdova@gmail.com

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Abstract

Introduction: The incidence of tumors in the eyelid is gradually increasing in the recent years, with the highest incidence among patients 70 to 74 years. Basal cell carcinoma is the most common malignant tumor eyelid, is responsible for 90 % of cancers in this area. Basal cell carcinoma (BCC) is the most common skin malignancy in humans. The proportion of basal cell carcinoma in the Slovak Republic in the final statistical processing in 2008 was approximately 3,926 cases in both sexes together, 275 cases were located on eyelid eye (7 %).

Methods: Retrospective study of patients with periocular BCC in period 2012 - 2013 at the Dept. of Ophthalmology, Medical School, Comenius University in Bratislava, Slovakia. We recorded 100 BCCs in 94 patients who were surgically treated and basal cell carcinoma was histopathologically verified.

Results: Group of 100 patients with BCC in period 2012 – 2013 surgically treated at the Dept. of Ophthalmology, Medical School, Comenius University in Bratislava, Slovakia. In a group of in 94 patients were more female – 59.6% (56 female patients and 38 male patients), the mean age was 69.5 years.

According to their histological patterns, BCCs were classified as nodular (n = 68), solid (n = 7), cystoid (n=4), adenocystoid (n=13), infiltrative (n=7) and these were divided also by grading G1 (n = 56), G 1-2 (n = 22), and G 2 (n = 23). The incidence on left side (n= 54) was little bit higher than on right side (n=42). We also divided BCC by location into inner angle (n=33), exterior angle (n=3), lower eyelid (n=48) and upper eyelid (n=13). The most frequent localization was on the lower eyelid (48%).

In 1 patient due to infiltration of the orbit exenteration was necessary.

We recorded 5 recurrences in this group of patients in period 2 years after surgery (5%).

Conclusion: Basal cell carcinoma is a locally invasive tumor of epithelial origin. The eyelid basaloma include about 7% of all of the skin basaliomas. Conventional treatment of eyelid tumors depends by a large degree on the nature, size, and localization of the tumor. Surgery is the best treatment option. In our series the highest percentage formed tumors in stage T1 (histopathology stage G1 – 56%) and nodular types (68%). Recurrence after surgery in our group of patients - 5% in 2 years period after surgery is comparable to other studies.

INTRODUCTION

The incidence of tumors in the eyelid is gradually increasing in the recent years, with the highest incidence among patients 70 to 74 years. The most frequently occurring eyelid tumors are basal cell carcinoma, squamous cell carcinoma, mucoepidermoid carcinoma, sebaceous carcinoma and Merkel cell carcinoma. Tumors that also affect the conjunctiva and eyelids are squamous cell carcinoma, lymphomas, leukemic infiltrates. Basal cell carcinoma is the most common malignant tumor eyelid, is responsible for 90 % of cancers in this area. Its incidence in recent decades is also growing; it arises from basal cells of the epidermis and hair follicles. In clinical practice, the most common basal cell carcinoma found is in stage T1 respectively. Basal cell carcinoma (BCC) is the most common malignancy in humans. It

usually occurs in regions of chronic sun exposure; BCC is usually slow growing and rarely metastasizes, but it can cause clinically significant local destruction [1].

The BCC is the most common type of skin cancer and occurs mainly on exposed surfaces to sunlight, even in those where the number of sebaceous glands and hair exist in great number. According to statistics, 86 % of basal appear on the face and scalp, 7 % in the cervix and 7 % in the rest of the body. The most common areas that exhibit these tumors are: the nose (25.5 %), the cheek (16 %), periorbital area (14 %), scalp (11 %) the flap of the ear and preauricular region (11 %) [2].

Epidemiology

The most common surgery for malignant tumor is surgery for

the basal cell carcinoma (BCC), which contains 85 to 90 % of all malignant epithelial tumors of the cap at this point. More than 99 % BCCs occur in caucasions, at about 95 % of these lesions appear at age 40 to 79 years, with a mean age at diagnosis of 60 years. Basal cell carcinoma arises from pluripotent stem cells in the epidermis that proliferate. Ultraviolet light exposure is one of the most important risk factors, particularly in the light of the skin of the individual. Proposed mechanisms for BCC enhanced tumor cell invasion and motility content collagenase. After being one BCC is a prognostic factor for the development of additional lesions [3,4].

In the Slovak Republic in the latest statistics compiled and published in 2008 had registered 5,173 non-melanoma skin cancer (diagnose code C44 according to ICD-10) in both sexes together (of which women accounted for 51.2 %). The total number of all reported cancer ($n = 30,144$) and in that the proportion accounted for 17.2 % (resp. 16.3 % of men and 18 % in women). They are not currently available data on the distribution of histological types and topographic sublocalisations of non-melanoma skin cancers [4].

Last published detailed data are available from the national website on the incidence of malignant tumors in the Slovak Republic for the period 1999 - 2003. During this time period, the SR had registered 19,091 non-melanoma skin cancers (both sexes combined), from which basal cell carcinomas accounted for 14,484 cases (75.9 % on average, range from 70.8 % in year 2003 - 86.2 % in year 2002) and squamous cell carcinomas 2,062 cases (average 10.8 %), the rest represented other and unspecified malignant skin tumors. The proportion of all histological types of non-melanoma skin cancers localized to the eye, eyelid (C44.1 according to ICD-10) was 1328 cases (7 %) [4].

Of the total number of basal cell carcinomas registered in the year. SR in 1999-2003 in both sexes together ($n = 14,484$) in the eyelid of the eye occurred 8.4 % of cases ($n = 1215$), no significant differences between the sexes. Of these 46.2 % of cases ($n = 561$) occurred on the left, and 48.7 % ($n = 592$) on the right, and the remainder being specified bilateral findings. The age range of patients with basal cell carcinomas reported in the period 1999 - 2003 represented 24 to 94 years (median 68 years, 25 % - 75 % quantile 57 to 75 years). Neglecting developments and in the application of the average values found in the period 1999 - 2003 by estimating the proportion of basal cell carcinoma in the Slovak Republic in the final statistical processing year 2008 was approximately 3,926 cases in both sexes together, of which 275 located on eyelid eye.

Pathophysiology

Many believe that BCCs arise from pluripotent cells in the basal layer of the epidermis or follicular structures. Tumors usually arise from the skin and occasionally arise from the external root sheath of the hair follicle, namely hair follicle stem cells residing just below the sebaceous gland duct in the region called the bulge.

Repair / Hedgehog intracellular signaling pathways play a role in sporadic BCCs and nevoid BCC syndrome (Gorlin syndrome). This path affects the differentiation of a variety of tissues during fetal development. After embryogenesis, they continue to

function in the regulation of cell growth and differentiation. Loss of the inhibition of this pathway is linked to human malignancies, including BCC [5,6].

The hedgehog gene encodes an extracellular protein that binds to a receptor complex of the cell membrane. Of the three known human homologs, Sonic hedgehog (Shh) protein is most relevant to the BCC. Repair (PTCH) is a protein which is the ligand-binding component of the hedgehog receptor complex in the cell membrane. Another member of the protein receptor complex, smoothed (SMO), is responsible for transferring the Hedgehog signaling to downstream genes. As these errors cause the development of tumors is not fully known, but most BCCs abnormalities either in PTCH and SMO gene. Some even consider a defect in the way the Hedgehog for requirements development BCC. UV-induced mutations in the TP53 tumor suppressor gene, which is located at band 17p13.1, have been found in some cases BCC. Active BCL2 (antiapoptosis protooncogene) also normally present in BCCs and can be immunohistochemically detected [7-10].

Histological findings

The tumor cells of ductile BCC, sometimes called basal cell carcinoma cells, are usually large, hyperchromatic, slightly oval nuclei and cytoplasm. The cells will appear uniform, and, if present, mitotic figures are usually low. Nodular tumor aggregates can have different sizes, but the tumor cells tend to align in densely palisade pattern at the periphery of these nests. Early lesions usually a connection lying epidermis, but also the touchpad can be difficult to appreciate in advanced lesions. Increased mucin is often present in the surrounding dermal stroma [7].

Morpheaform aggressive and infiltration BCCs have growth patterns, resulting strands of cells rather than circular nests. Morpheaform BCC arises as thin strands of tumor cells (often only one cell of thickness), which are embedded in a dense fibrous trees. Source infiltrate BCC dwell somewhat stronger than morpheaform BCC, and have pointed, irregular appearance. Infiltrate the BCC usually does not scar trees as seen in morpheaform BCC. Peripheral palisading and insertion are less pronounced and morpheaform infiltration BCC than in less aggressive forms of cancer, and subclinical involvement is often extensive.

More aggressive variant, micronodular BCC, it appears small nodular aggregates basaloid cells. Reverse artifact tends to be less pronounced than in the nodular form of BCC and subclinical involvement is often significant. Basosquamous cancer, that has the characteristics of both the BCC and squamous cell carcinoma, is also considered aggressive skin cancer [11,12].

Therapy

A skin biopsy is required to confirm the diagnosis and identify the histological subtype of BCC. Shave or punch biopsy is usually done. Further processing is rarely necessary, if it is suspected that a genetic disorder.

Shave biopsy extensions for the diagnosis of most BCCs. This prevents extremely superficial sampled because there is no tumor is possible. For example, a re-epithelialize ulcerated BCC with normal epidermis while the tumor is present at a deeper level.

Part or all of the BCC can be sampled, but avoid going beyond the edges of clinical biopsy is intended for diagnostic purposes.

Punch biopsy is a simple way to get a thick sample. The most suspicious area of lesions can be sampled or more biopsy samples may be taken when the tumor has a different appearance in different areas. Avoid punch biopsy if curettage is scheduled for final processing.

Local therapy of chemotherapy and the immunomodulatory agents is useful in some cases of BCC. In particular, small and superficial BCC respond to these compounds. They may be used for the prophylaxis or maintenance of patients who are prone to have a lot of BCCs such as those syndrome, basal cell nevus [13-17].

Surgical care

Surgical treatment of BCC is to destroy or remove the tumor such that no malignant tissue was allowed to further multiply. Factors to, the choice of therapy are in histological subtype of BCC, the location and size of tumor, age of the patient, the patient's ability to tolerate surgery, and loads. Recurrent tumors are generally more aggressive than primary lesions and subclinical extension also tend to increase.

The most common surgical methods are curettage, excision with margin examination, Mohs micrographic surgery and radiotherapy. Additionally, cryotherapy is sometimes used to treat these tumors.

Surgical excision is more time-consuming and costly than curettage. In addition, this method requires sacrifice of normal tissue to obtain acceptable cure rates. Margins of at least 4 mm are needed, even with the least aggressive BCCs, to achieve 95 % cure rates. If standard bread-loaf tissue sectioning is used, areas of margin involvement may be missed under microscopy because only a small sampling of the specimen is evaluated [18].

Mohs micrographic surgery

Mohs surgery involves removal of clinically apparent tumor and thin edge normal-looking skin around the defect. The saucer-shaped sample of tissue is a tissue adjacent to the tumor or surrounding the tumor margin. This range is the sample in the cut and marked so that the integrity of the lower and outer edges of tumor are examined under a microscope to minimize sampling errors. Using frozen section technique allows examination of tissue, while the patient is in the office. Texture is mapped microscopically, so if a tumor bearing persist, further circumcision can be focused only on those areas to spare normal tissue.

The Mohs technique, approximately 100% of the edges of the tissue, is examined, compared to the standard vertical (loaf) cutting, which are examined below 1 % of the outer edges. As the relatively thin sheets is adopted only in areas with established tumors, this technique is tissue sparing. Excision and repair can usually be done in the same day. For most importantly, Mohs micrographic surgical excision is the best long-term cure rate of any treatment modality for BCC. Cure rates for primary BCC is 98 – 99 % with Mohs excision and 94 – 96 % for recurrent BCC.

Chief disadvantages Mohs surgery is the extra cost and time

requirement compared with curettage. Mohs cutting a favorable compared to the standard surgical excision when one factors in the treatment of fever recurrence investigation with this technique [19].

Radiation therapy

Radiation therapy is effective as a primary treatment of various BCCs. For most BCCs, cure rates approaching 90 %. This is especially useful for patients who cannot easily tolerate the operation, such as elderly or ill subjects. The irradiation may be a useful adjunct in patients have aggressive tumors that were treated by surgery, or if the operation cannot clear the edge of the tumor. Radiation is also an excellent option for patients who refuse surgery because of the size of the lesion or close to vital structures.

The first cosmetic results tend to be good, and this therapy may be less distorting than surgical excision. However, long-term results after a few years can be deformed. Another disadvantage of this method is that the operating margin cannot be examined. Tumors recurring in previously radiated sites tend aggressive and difficult to treat and reconstruct. Radiation therapy remains an important, viable option selected patients with BCC [20-22].

Cryotherapy

Cryotherapy is also an effective treatment for most aggressive BCCs, cured rates near to 90 %. However, no satisfactory therapy is highly dependent on operator experience. The optimum cure rate is achieved when the depth, duration, and temperature of handling is measured by a specially designed apparatus, such as cryoprobes.

Patients must be willing to bear immediately after treatment, swelling, necrosis resulting treated areas and unpredictable scarring that can occur with this approach.

This method is commonly used for the treatment of BCC, with the exception of a few experienced cryosurgery [2].

Differential diagnosis

Differential diagnosis includes squamous cell carcinoma basal cell carcinoma, Kaposi's sarcoma, lymphoma, sebaceous carcinoma and amelanotic melanoma squamous cell carcinoma may be graduated according to the lack of blood flow that occurs with Kaposi's sarcoma, lack of necrosis of the overlying material that occurs with basal cell carcinoma, and lack salmon or pink color that occurs with lymphoma. Rough, grayish, amorphous, increased epithelial lesions characterized by squamous cell carcinoma. Histological examination of the tumor is necessary to exclude other tumors [2].

METHODS

Retrospective study of patients with BCC of the eyelids in period 2012 - 2013 at the Dept. of Ophthalmology, Medical School, Comenius University in Bratislava, Slovakia. We recorded 100 BCCs in 94 patients (56 female patients and 38 male patients; mean age, 69.5 years) who were surgically treated.

RESULTS

Retrospective study of patients with BCC at the Dept.

of Ophthalmology, Medical School, Comenius University in Bratislava, Slovakia, included a total number 100 BCCs in 94 patients. In a group of in 94 patients were more female – 59.6 % (56 female patients and 38 male patients), the mean age was 69.5 years.

According to their histological patterns, BCCs were classified as nodular (n = 68), solid (n = 7), cystoid (n=4), adenocystoid (n=13), infiltrative (n=7) - see Figure 1. The most frequent was nodular type.

The group of patients with BCC was divided also by grading: stage G1 (n = 56), stage G 1-2 (n = 22), and stage G 2 (n = 23) - see Figure 2. Infiltration of the orbit was in 1 case - see Figure 3; in this patient due to infiltration of the orbit exenteration of the orbit was necessary.

The incidence on left side (n= 54) was little bit higher than on right side (n=42). We also divided BBC by location into inner angle (n=33), exterior angle (n=3), lower eyelid (n=48) and upper eyelid (n=13) – see Figure 4. The most frequent localization was on the lower eyelid (48 %).

We recorded 5 recurrences in this group of patients in period 2 years after surgery (5 %).

DISCUSSION

Basal cell carcinoma is a locally invasive tumor of epithelial

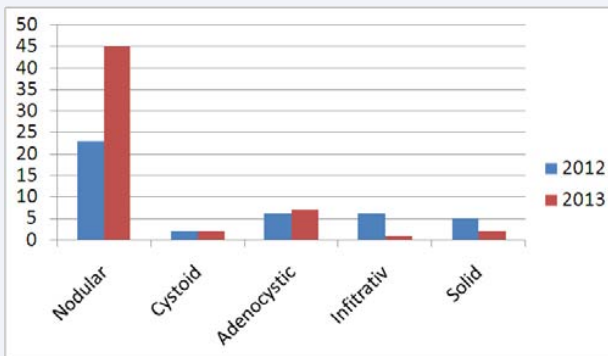


Figure 1 Histological findings in patients treated for basal cell carcinoma at Dept. of Ophthalmology, Medical School, Comenius University in Bratislava in period 2012 – 2013.



Figure 2 Patient with basal cell carcinoma of the lower eyelid (stage 1) before treatment (author A. Furdova, Dept of Ophthalmology, Medical School Comenius Univ., Bratislava).

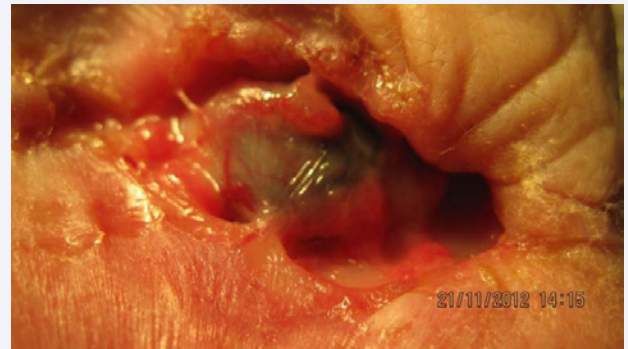


Figure 3 Patient with basal cell of the lower eyelid without treatment in stage 4 coming to our Dept. with infiltration of the orbit (author A. Furdova, Dept of Ophthalmology, Medical School Comenius Univ., Bratislava).

Periocular BBC by Location

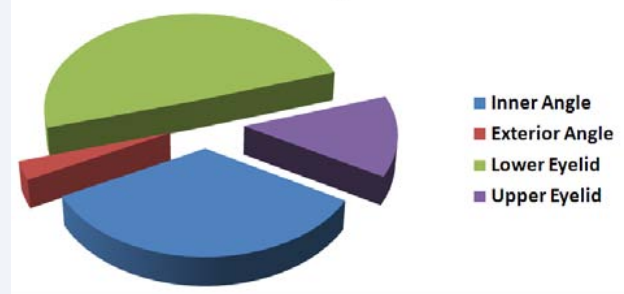


Figure 4 Localization of the periocular BCC in patients treated for basal cell carcinoma at Dept. of Ophthalmology, Medical School, Comenius University in Bratislava in period 2012 – 2013.

origin. It is the most common type of skin cancer in Caucasian population, characterized by slow growth and rarely metastasizes. It is often found in the head and neck. In most cases, the clinical picture is sufficient for the diagnosis, whereas sometimes a histological confirmation is required. It's the most common malignant skin cancer type that is locally destructive, derived from the basal cells of the lower epidermis. Usually it does not metastasize. It appears in skin types I and II, whereas ultraviolet radiation is not the sole cause of its occurrence, because it occurs in areas such as the vulva and buttocks.

Skin cancers are the most frequent human malignancies among Caucasians. Generally the basal cell cancer occurs most often on the face, is painless and its existence can be ignored by the patient. It tends to bleed itself, to heal and bleed again and yet to destroy the local skin tissue. In fact, if neglected can penetrate deep tissues in the cranial cavity with very serious consequences [18].

Basal cell carcinoma often begins as a small papule which then becomes nodule and centrally. The limit of the ulcer is slightly concealed and color like pearls. Also, small blood vessels are shown (telangiectasia) on the surface of the lesion. Rarely, the basal cell type may display pigmentation and for this reason is diagnostically confused with malignant melanoma. Depending

on the morphology of basal cell carcinoma, formula or superficial bladder can be pigmented or type of scleroderma (appears scarlike) or follicular. The treatment of basal skin cancer is done primarily by surgical removal [23].

Apart from prognostic factors, many other factors play an important role in selecting the most appropriate therapy, such as the overall physical condition of the patient, potentially serious coexisting diseases, anticoagulation, the presence of trained personnel and appropriate equipment and patient's preference. The biological behavior of BCC is characterized by local invasion and malignancy, but rarely provides with metastases. Besides the effect in the general population, there are specific syndromes which usually occur several BCC, such as multiple basal syndrome (Gorlin), syndrome Basex, the albinism and pigmented dry skin. The Sebaceous Nevus of Jadassohn, may also develop into basal cell carcinoma in about 15% of the patients.

Long-term sun exposure plays a role but not so clear as in squamous cell carcinoma (SCC). The BCC is rare in the dark colored races, while it is common in light colored people living in climates with plenty of sunshine. The BCC most commonly occurs in the head and neck, but the 1/3 of these positions is protected from the sun. The eyelids are a frequent location for BCC and rarely for SCC. Obviously, many other factors other than ultraviolet rays may be involved. The distribution of BCC closely follows the distribution of pilosebaceous units. The BCC unlike the SCC, will not grow at a precancerous state. Thus, the BCC rarely developed by factors such as scarring, burns, radiation or certain failures of components. The majority of BCC occurs without prior no other damage, while some patients report a prior injury.

The dotted exposure to sunlight causes burns, whereas BCC and other type of melanomas are associated with chronic sun exposure and skin cancers. Predisposing factors may be chronic irritation nevi and immunosuppression.

There is no evidence to suggest that the disease is associated with hormone activity, but individual patients showed impressive historical recurrence and rapid progression of disease associated with pregnancy. Taking contraceptive pills, most of them contain progestin agents, has also been associated with increased incidence and development. Genetic factors are also involved. Thus, patients with dry skin develop multiple pigmented BCC, SCC or as other tumors. Multiple BCC is an inherited condition (syndrome of multiple BCC).

Basal cell carcinoma occurs clinically, initially as a red papule that progressively enlarges. Its main feature is the star-shaped edge. It may nevertheless appear as a swelling color or as an ulcer with characteristic basis. The definitive diagnosis is made by histological examination.

The prognosis of the disease, i.e. the outcome of the course of the patient, may result in the disease's treatment, or not. Overall, it is determined by several factors. The most important of them are: the stage of the disease, the presence of bleeding and/or ulceration of the initial outbreak, the size and location of the tumor and the general health of the patient. The diagnosis of BCC can be done by subtractive biopsy or partial biopsy, especially when there is a large volume at a certain place, or where the therapist doubts about the visual diagnosis. Each expert

pathologist examines the cells under a microscope and only the cell histology will determine the diagnosis and treatment. Therefore, it is important to suspect the lesions. Unfortunately, there is no other way for an absolute diagnosis and treatment of skin cancer and there seems to be some misleading evidence [24].

Given the fact that BCC rarely metastasizes, laboratory and imaging studies are not commonly clinically indicated in patients presenting any localized lesions. The imaging studies may seem necessary when the deeper structures are involved, such as bone, is clinically suspected. In such cases, computed tomography scans or radiography can be used. Surgery offers an effective cure therapy rate around 98%. Prerequisite course is the correct clinical assessment of damage and the determination of the exact boundaries. Other treatments are curettage, cryotherapy, radiotherapy or sublimation with LASER. The proper resection of the lesion includes the ablation of healthy tissue around the inflicted area, usually at least 0.5 cm, depending on the clinical picture and localization. The restoration of the deficit area receives plastic surgery. Small incisions are repaired by direct suture. For larger ones, classic techniques to the most complex are applied. In this course the anatomical region and existence of the defect, is taken into consideration. Postoperatively, the patient should be monitored, both for the risk of local recurrence, and with the emergence of a new tumor.

The aim of the initial treatment of basal cancer is treatment of the tumor by maintaining the utmost functionality of adjacent tissue. Also it must achieve an acceptable aesthetic result. The treatments that can be used to BCC are divided into invasive and non-invasive. Often, surgery and radiotherapy are applied.

Surgical removal of the tumor is one of the most effective treatments for primary basal cell carcinoma, which also has very good aesthetic results. Histological examination of the limits can be performed either after surgery or during the surgery. Radiotherapy involves different techniques such as surface radiation, which is suitable for deep lesions <6mm, treatment with electron beams, which penetrates deeper and brachytherapy which is useful for lesions located on curved surfaces. It has very good therapeutic and cosmetic results, if used correctly. Radiation therapy is contraindicated in patients with genetic disorders that predispose to the development of skin cancer, such as pigmented dry syndrome, multiple basal cell carcinomas or/and in patients with connective tissue diseases. Radiotherapy may be used as adjunctive therapy in cases of tumors that were surgically excluded, the limits of resection were positive and in cases of high risk tumors, or cases that exhibit significant perineural infiltration [21,22].

Topical treatments include treatment with imiquimod and 5-fluorouracil, photodynamic therapy (PDT) and cryotherapy. In rare cases, distant metastases from basal cell carcinoma are found. In such cases an appropriate systemic therapy is applied. The inclusion in clinical trials or the use of inhibitors of the pathway Hedgehog is recommended, which is currently administered in clinical trials. Alternatively it can be administered chemotherapy based on platinum drugs [25-28].

The tumor resembles a basal layer of squamous epithelium. Macroscopically is very varied, starting as a small resistance or

inner corner of the eyelid, then exulcerates and infiltrates the surrounding area. It is characterized by invasive growth, low mortality and low tendency to metastasis. Definitive diagnosis of basal cell carcinoma can be determined only on the basis of histological examination. Differential diagnosis of basal cell carcinoma can be confused with adnexal epitheliomas, the presence of melanin may lead to confusion. Primary therapy of basal cell carcinoma of the lower eyelid and the inner corner is essentially surgical. A wide excision bearing with free resection margins (at least 2-3 mm) is a highly effective solution for cases of 5-year local recurrence rate of 10 %.

Given the size of the defect after excision of the primary tumor, 80 % of patients continue with any necessary reconstructive surgeries. Some advanced lesions require extensive surgical intervention, it is necessary to continue with the mutiserios surgery. Reconstructive plastic surgery of the eyelid after tumor removal is currently in progress. Nevertheless, exenteration of the orbit is still one of the options to address the advanced stage of the process. For positive resection margins after insufficient primary excision (e.g. inexperienced surgeon) is to consider indication reexcision. For locally advanced basal cell carcinoma, especially in an area with a high risk of local recurrence, after excision or unacceptable cosmetic effect, radiotherapy is an appropriate solution. In some exceptional cases, the impossibility of completion of surgery can be a definite alternative to an isolated radiotherapy. Recurrence rates for eyelid skin cancer range from 5-30%, when managed by standard modalities, such as standard surgical excision and radiation therapy. Recurrence rates are rather high for skin cancer. Since the risk for local spread is high and the reconstruction of the eyelids is very complicated, by the complex anatomic relationships that need to be restored, after the tumor removal, it is necessary the early diagnosis of the eyelid skin cancer [6].

Brachytherapy is seen as an effective treatment for skin cancer. A high proportion of skin cancers are caused on sun-exposed sites, such as the head or face. Skin cancers can be successfully treated by surgical removal of the tumor. However, surgery on places such as the nose, ears, eyelids or lips may cause disfigurement or may require a reconstructive surgery, under a general nonesthetic result in order to maintain the natural appearance of the patient. In the past, especially in the 70s, a standard external beam of radiotherapy was used (usually 60 Co), in the treatment of basal cell carcinoma of the lower and inner eyelid. Up to this date, this treatment still considered as highly efficient.

HDR brachytherapy 192Ir is developed for the treatment of basal cell and squamous cell carcinoma of the eyelid, during 1990s. Newer methodology of applied brachytherapy in the treatment of non-melanoma lesions is HDR electronic brachytherapy (BT electronic).

Furdova *et al.*, (2013) conducted a study based upon HDR brachytherapy by 192Ir, in the treatment of BCC of the lower eyelid and inner angle. They first experienced and evaluated the relapses in group of patients, after surgery with applied adjuvant HDR brachytherapy. Patients had recurrent basal cell carcinoma of the lower eyelid in year 2010. In 3 male patients with recurrent finding of basal cell after surgery, the authors applied adjuvant

HDR 192Ir brachytherapy. The isodose curve chosen to prescribe the dose was 5 mm away from the skin surface. The average age was 58 years (52 to 75 years). From a group of 41 patients with non melanotic malignant tumors of the eyelids in 3 patients (7.3 %) with relapse after incomplete excision of the basal cell carcinoma of the lower eyelid they applied after removal of stitches after surgery adjuvant HDR 192Ir brachytherapy. For every patient an individual orbit mask that bore plastic applicators, was made. Tungsten eye shield applicator was applied to protect the eye globe. The patients were treated of 10 fractions of 4.5 Gy single dose (5 times weekly), scheduled within 2 weeks. Patients received outpatient treatment. Acute toxicity, postradiation erythema of eyelid and skin around were relieved by standard symptomatic treatment within a few days after the completion of radiation therapy. In 2 year interval after HDR 192Ir brachytherapy authors did not record the occurrence of late complications such as corneal ulcers [6].

The Hh pathway inhibitor vismodegib (Erivedge), the first medication for advanced BCC, provides an important new therapy for this disfiguring and potentially life-threatening disease and offers new possibilities for long-term clinical management. In vitro studies indicate that vismodegib inhibits the hepatic enzymes CYP2C8, CYP2C9, and CYP2C19 and the drug efflux transporter Bcrp. Vismodegib does not induce CYP1A2, CYP2B6, or CYP3A4/5 in human hepatocytes. Basal cell carcinoma with orbital extension and extensive periocular involvement responds to vismodegib therapy. The long-term prognosis remains unknown, and additional prospective studies are indicated [29,30].

CONCLUSION

Basal cell carcinoma is a locally invasive tumor of epithelial origin. It is the most common type of skin cancer in Caucasian population, characterized by slow growth and rarely metastasizes. A high proportion of skin cancers are caused on sun-exposed sites, such as the head or face. Skin cancers can be successfully treated by surgical removal of the tumor. However, surgery on places such as the nose, ears, eyelids or lips may cause disfigurement or may require a reconstructive surgery, under a general anesthetic result in order to maintain the natural appearance of the patient. Conventional treatment of eyelid tumors depends by a large degree on the nature, size, and localization of the tumor. The optimal treatment for every patient is most likely to be determined, after the close cooperation between the doctors and the patient's needs. Brachytherapy on the basal cell carcinoma of the eyelid is seen as an effective treatment for skin cancer. Bibliographic data indicate that curative rates of the different treatments, such as surgery or radiotherapy, are similar.

Recurrence after surgery in our group of patients – 5 % in 2 years period after surgery is comparable to other studies.

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