

ORIGINAL PAPER

The Results of Treatment of Basocellular Carcinomas of the Head Skin

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Introduction: Basocellular skin carcinoma (BCC) is the most common cancer in the human population. BCC almost appeared at adult's people, but it can be found at children, too. **The aim:** The aim of this study was to determine which the position of BCC on the head skin is the most difficult for the treatment and what the reasons are for it. **Methods:** With the prospective study, from June 2004 to June 2011, were compared the results of treatment of basocellular carcinomas (BCC) of the head skin. The examinees were divided into 3 groups. The first group, the group A (38 patients) was consisted of examinees treated of BCC on the nose. In the second group, the group B (42 patients) was classified of examinees treated of BCC on the face, temple, eyelids and forehead, while the third group, group C (35 patients) was classified of examinees treated of BCC on the scalp. The parameters for comparison the results of treatment were the method of treatment, number of the relapse, elapsed time from surgery to relapse and consequently defacement. **Results:** There was found a statistical significant difference in terms of choice of methods of operative treatment for the significantly higher number of operations on the scalp operated with cutaneous transplants. It was confirmed that the localization of the tumors on the scalp, and then on the nose are with the highest incidence of the relapse, whereas the post-operative defacement is mostly on the scalp after skin graft placement. **Key words:** basocellular, skin tumors, treatments.

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1. INTRODUCTION

Basal cell carcinoma of the skin (BCC) is the most common skin cancer, also the most common cancer in human population. BCC most commonly occur in adults, although it can be encountered in children. The incidence of BCC of the skin in Europe is 100 per 100,000 populations, in Australia 900 per 100,000 inhabitants (1). BCC makes up about 75% of all non-melanoma skin cancer (NMSC). Number of NMSC is increasing. Thus, in the USA in 2010 was diagnosed in 3.5 million cancers

among 2 million patients (2).

The exact number of new cases of BCC patients in our country is not known and for that there are several reasons. First of all, there is no obligation to report the BCC of the skin, and in addition, many clinicians treat skin BCC by cryotherapy without histopathological confirmation of disease. Assumption of the actual number of patients with NMSC it is possible to make on the basis of known incidence of 100 new cases per 100,000 population for Europe (1). Using this

methodology estimate of the potential number of new cases of NMSC in this area is over 4,500 people annually. The most important cutaneous carcinogen is ultraviolet (UV) radiation. Approximately 80% of skin cancers (excluding melanoma) develop on the skin exposed to sun, and about 30% of them occur in the region around nose (3).

Besides in case of nevoid basal cell carcinoma syndrome, BCC rarely occur on the palms or soles. The appearance of the mucosa BCC is debatable. The cases of oral mucosa basal cell carcinoma, which are reported in the literature, are likely cases of ameloblastomas (2, 3, 4, 5).

2. GOAL

The goal was to determine which is the position of BCC on the head skin the most difficult to treat and due to which reasons.

3. MATERIAL AND METHODS

A prospective clinical study, which lasted from June 2004 to June 2010, included subjects treated for BCC of the skin of the head. Subjects were divided into 3 groups. First group, group A (38 patients) were patients treated for BCC at the nose area. In the second group, group B (42 patients) were classified subjects treated by the BCC on the face, eyelids and on the forehead, while the third, group C (35 respondents), are respondents treated for BCC of the scalp. For diagnosis were used: medical history, clinical examination and computerized dermoscopy, and after ex-

cision the definitive pathohistological analysis.

Tables 1 and 2 show the distribution of respondents by sex and age, whereas Table 3 shows the clinical findings of the BCC, or the degree of lesions progression.

Gender	Group A	Group B	Group C
Male	21 (55.3%)	22 (52.4%)	19(54.3%)
Female	17 (44.7%)	20 (47.6%)	16(45.7%)
Total	38 (100%)	42 (100%)	35(100%)

TABLE 1. Subjects by gender

Age	Group A	Group B	Group C
20-30	2 (5.3%)	0 (0%)	1 (2.9%)
31-40	2 (5.3%)	0 (0%)	1 (2.9%)
41-50	6 (15.8%)	7 (16.8%)	5 (14.3%)
51-60	11 (28.9%)	13 (30.9%)	8 (22.8%)
More than 60	17 (44.7%)	22 (52.3%)	20 (57.1%)
Total	38 (100%)	42 (100%)	35 (100%)

TABLE 2. Subjects by age

Lesion	Group A	Group B	Group C
Small, limited lesion	28 (73.6%)	33 (78.5%)	22 (62.8%)
Pro-gressed lesion	10 (26.4%)	9 (21.5%)	13 (37.2%)
Total	38 (100%)	42 (100%)	35 (100%)

TABLE 3. Local findings

4. RESULTS

Results of treatment of BCC in the investigated groups are shown in Tables 4-7 and the Figure 1. Parameters for comparison were: the method of post excision defect closing, the number of relapses, and the time elapsed from excision to tumor relapse and side-effect of treatment – disfigurement.

Method	Group A	Group B	Group C
Direct suture	28(73.6%)	33(78.5%)	12(34.2%)
Skin transplant	0(0%)	3(7.2%)	23(65.8%)
Slice	10(26.4%)	6(14.3%)	0(0%)
Total	38(100%)	42(100%)	35(100%)

TABLE 4. Result – method of post excision defect closing

Relapse	Group A	Group B	Group C
Yes	6(15.7%)	2(4.7%)	7(20%)
No	32(84.3%)	40(95.3%)	28(80%)
Total	38(100%)	42(100%)	35(100%)

TABLE 5. Result – relapse

Statistical analysis showed significant differences between groups of respondents in the following characteristics:

- Between group A and C in terms of the *method for post excision defect closure* ($p < 0.01$, 99%), $Z = 3.1325790$.
- Between group B and C in terms of the *method for post excision defect closure* ($p < 0.01$, 99%), $Z = 4.43227$.
- Between groups B and C in terms of *relapse* ($p < 0.01$, 99%), $Z = 4.50234$.
- Between group A and B in terms of *relapse* ($p < 0.05$ -not highly significant).
- Between group A and C in terms of *side effects of surgery, disfigurement* ($p < 0.01$ 99% confidence), $Z = 4.8443$.
- Between groups B and C in terms of *side effects of surgery, disfigurement* ($p < 0.01$ 99% confidence), $Z = 3.42630$.

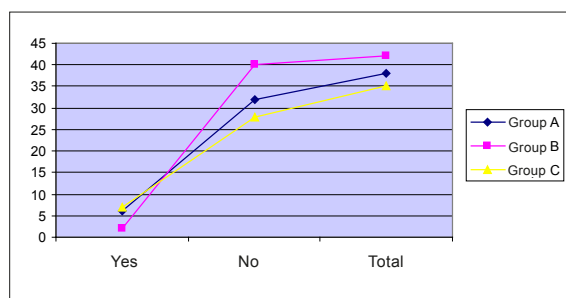


FIGURE 1. Result-relapse

male. The youngest respondent had 22 years and the oldest 75 years.

BCC begins as small, waxy node, which often shows several small telangiectasias (chronic dilated blood vessels on the surface of the skin). A node typically increases slowly and often goes through a specific ulceration. The typical lesion is then made by successive ulcer enlargement surrounded by pearly curved edge (7).

Our research has shown that the majority of patients underwent surgery at the stage of tumor development that can be characterized as “small, well circumscribed lesion”. By this characteristic, there were no statistical differences between groups A, B and C.

Basal cell carcinomas usually appear as single lesions, but can often appear as multiple lesions, and at the same time or one after another. In group C, one of our patients has also had 7 separate BCC lesions, while one respondent in group B had 5 single BCC lesions. Bleeding from the tumor foci usually comes in the later stage of BCC development. This sporadic bleeding at nearly all respondents led to see the doctor.

Most BCC has limited potential for growth, however, it may occasionally be infiltrative and aggressive and then reach significant size and penetrate deeply. On the face it can ruin the eyes and nose, or it can penetrate the skull and attack meninx. In this form, this tumor can be fatal (8).

Quick diagnosis, especially of the initial lesion, it is possible before the surgery by computer (digital) dermoscopy. This diagnosis allows timely detection of the radical character of the lesion and removal of BCC, which reduces the risk of relapse and improves the prognosis of treatment.

A small number of our respondents had the tumor in locally advanced stage

Time (months)	Group A	Group B	Group C
11		22	14
14		26	16
23			24
26			27
33			33
36			35
			40
Total	6	2	7

TABLE 6. Result – time from surgery until relapse

Disfigurement	Group A	Group B	Group C
Yes	8 (21.1%)	7 (16.6%)	17(48.5%)
No	30 (78.9%)	35(83.4%)	18(51.5%)
Total	38(100%)	42(100%)	35 (100%)

TABLE 7. Side effect of the surgery disfigurement

5. DISCUSSION

Basal cell carcinoma (BCC) is the most common non-melanoma cancer. For the BCC is true that it more often occurs in males and older age, but recent analyzes show increasing incidence of skin cancer among younger people so they can also be seen in children (6).

Of our 115 patients with skin cancer, 53 (46%) were female and 62 (54%)

of BCC and without significant statistical differences between the groups. A number of locally advanced BCC in our patients was the scalp (group C), probably due to the position of the BCC, which is "hidden in the hair" and a longer time does not make complications. In one patient in group C, the tumor was in an extreme phase, when the torn scalp and calvary, with the lesion invasion in meninx.

The basic principle of facial plastic and reconstructive surgery is the removal of the tumor with optimal aggressiveness, and that the operational defects are closed by simplest method (1, 6). It is primarily important enough to radically remove tumor (9). Direct suture is the best solution whenever is possible to apply (9). However, direct suture is often not possible, so it is necessary to use cutaneous transplantation of cutaneous slice (10).

By analyzing our respondents, it was observed that the greatest number of direct suture was done, as a method of treatment in groups A and B, while in group C most patients underwent transplantation of skin. The first reason is that the subjects in groups A and B had more frequently advanced lesions, and the second reason, inelasticity of the skin and scalp prevented closure of the defect by direct suture, and to avoid closure of defects of the skin under tension.

About 40% of patients with basal cell carcinoma will have one or more basal cell carcinoma within 10 years (11).

BCC of the skin of the nose more often recur than at other areas of the head and face. It seems that the reason is avoiding radical incision during the surgery (12). There have been persistent recurrences of BCC on the scalp, despite the radical excisions (12).

Various studies have determined the parameters and risk factors that lead to relapse and disease progression. These are the macroscopic parameters (size, shape and multifocality of the tumor) and microscopic parameters (the degree of cell differentiation) (11).

In group A there were 6 relapses of skin BCC. Relapse occurred in 2 patients in group B while in group C there were 7 relapses. The average time from tumor excision to recurrence did not

differ from data from the literature and was on average 25 months. All cases were recurrences after surgery, locally advanced lesions. More often recurrent was BCC on scalp despite the radical surgery, which is possible to explain by the width of the tumor base. As broader is the tumor base, the greater is the surface area that is prone to dysplasia and anaplasia. For the recurrence at the nose probably is responsible effort to avoid disfigurement.

Rare are BCC surgeries on the head, which does not leave traces behind (2). On the contrary, radical surgery of BCC on the head often causes a certain degree of disfigurement (6, 7, 8, 9). When it comes to treatment and removal of BCC from head skin, aesthetics is the second plan, but still taken into account that the optimal excision are not left behind, the degree of disfigurement, which will later present mental burden for the patient (10).

BCC surgeries on the nose, especially at an advanced stage, will usually lead to the obvious scar, which is seen as a certain degree of disfigurement. Direct suture zone at the nose, often lead to advancing tissue, so it is more or less damaging to pre-existing architecture of the nose. Local rotational or transpositional slices, often leave traces, by which it can be known that the nose has been operated (3).

Direct suture is probably the most applicable option for BCC surgeries at the face, because usually there is enough skin, which can cover an operating defect directly. The possibility of closing surgical defect after excision of BCC on the scalp is very limited already for the defects of 1.5 cm in diameter (3).

With advanced BCC on scalp, direct suture is practically out of the question. Cutaneous transplantation, the thickness of the skin ruptured is the most common surgical method of closing post excision defect after the treatment of scalp BCC. This method, however, leaves behind a sharply demarcated area without hair, and if it is impossible to disguise it with surrounding hair there are visible disfigurements, which attract attention (3, 4).

In group C in most cases there is a certain degree of disfigurement as a consequence of the closure of the post

excision defect by skin graft. Areas that appeared smooth and without hair, were more or less conspicuous and are characterized as disfigurement, which is the cost of treatment for specifically advanced BCC on scalp.

Disfigurement in patients in groups A and B, therefore, on the nose and other facial parts, mostly accounted for visible scars from surgery. Scar size and degree of such disfigurement, is directly proportional to the size of the tumor that was removed.

There is a belief that basal cell carcinoma (BCC), generally do not metastasize, however, there are exceptions (6).

Depending on the source of data in the literature, the occurrence of metastasis varies from 0.01% (according to the pathologist reports), to 0.028% (according to reports of dermatologist), to 0.1% (according to data from the surgical centers). A report published in 1984, described 175 cases with histologically proven BCC metastases (3, 4, 5).

Typical history of basal cell carcinoma (BCC) with metastases is usually tied to large, ulcer, locally invasive and destructive primary lesion, which appeared again in spite of repeated surgical interventions or radiotherapy (7, 8, 9, 10).

However, massive size, ulceration, or occurrence of multiple relapses is not absolute prerequisites for metastasis. Most research has not established a specific histologic type of BCC which is more prone to metastasis than others. Also, there is no evidence that the immune defense of the host was significantly affected. However, some authors argue that metatypical or (basosquamous) basal cell type cancer is most likely to metastases.

Unlike metastatic squamous cell carcinoma of the skin (PCC), which shows limphogenously metastases in 80% to 90% of cases, the metastatic BCC, hematogenous and lymphatic spread shows almost uniform distribution (4, 8, 11).

Thus, about 50% of patients with metastatic BCC develop metastases into the lymph nodes. Meanwhile, in the first line of the spread of haematogenic BCC are the lungs and bones. There was the appearance of metastases in the liver and other abdominal organs

as well as skin or subcutaneous tissue (4, 8, 12). The average duration of life after metastasis to the lungs, bones or other organs is about 10 months (4, 8, 12).

During our study we did not encounter a single case of metastases, even in case of very neglected BCC on the scalp, some of which had a diameter of 15 cm.

6. CONCLUSION

Basal cell carcinoma of the skin, located on the nose and scalp, are the hardest to treat. It is determined that the localization of tumors on the scalp and then the nose have the highest incidence of relapse. All cases of relapses were observed after excision of locally advanced lesions. In majority of patients, intraoperative skin defect was closed by direct suture. Local adverse effects of treatment BCC as consequent disfigurement, was significantly more frequent in cases when post excision defect was closed by cutaneous graft. Disfigurement is significant in case of location at the scalp and it is not possible to disguise it with hair.

Because of the significantly smaller number of disfigurement, direct suture closure of the post excision defect take precedence, regardless of the localization of the tumor.

Conflict of interest: none declared.

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The image shows a screenshot of the EFMI (European Federation for Medical Informatics) website. The top navigation bar includes the EFMI logo, the website URL (www.efmi.org), and options to add to favorites and change font size. The main content area is divided into three columns:

- Left Column (Navigation):** Contains links for Home, MAIR PERU, STC2012 Programme available, STC2012 MOSCOW, and EFMI COUNTRIES. The countries list includes Austria, Belgium, Bosnia-Herzegovina, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Moldova, Republic of, Netherlands, Norway, and Poland.
- Middle Column (STC2012 Moscow):** Announces the STC2012 Advanced Programme for Friday, 30 March 2012. It states that the conference will open on 18 April at MedSoft fair with a lecture and seminars, and will focus on applications and methods in NN Burdenko institute. It also mentions that registration is still possible and provides a link to the conference website.
- Right Column (STC2012 PISA):** Announces the STC2012 Partnership for Modernisation -new- for Saturday, 03 March 2012. It states that registration is now open at www.STC2012.eu and describes the aim of the EFMI special topic conferences (STC) as providing a forum for discussion and sharing experiences in Medical Informatics in Europe (MIE).

At the bottom right, there is a graphic for MIE 2012 PISA - ITALY, 26 - 28 AUGUST, with the website www.mie2012.it.