Short communication
Kratko saopštenje UDK 617.76-006.6-089 Medicus 2007; 8(2): 49-53

EXPERIENCE IN TREATMENT OF BASAL CELL CARCINOMA IN ORBITAL REGION

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ISKUSTVA U TRETMANU BAZOCELULARNOG KARCINOMA ORBITALNE REGIJE

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Received/Primljen: 05. 03. 2007. Accepted/Prihvaćen: 08. 06. 2007.

ABSTRACT

To present experience in treatment of basal cell carcinoma in the orbital region and to prove the efficacy of the treatment.

Prospective analysis of 111 patients with basal cell carcinoma in the orbital region with minimal 3 year follow up. Tumor location, tumor size, histological type, surgical procedure and complications were recorded.

The incidence of basal cell carcinoma was higher in man and in older age. We presented the excision techniques and reconstruction possibilities and pointed out the importance of sufficient excision margins. A recurrence rate of 9.01% was observed in follow up. Medial canthal recurrences mostly occurred (15.79%). In tumors larger than 2 cm recurrence rate was 66.67%, and solid BCC was presented in 0.46%. Only 19.05% of recurrences occurred in tumors with positive resection margins.

Surgical excision is the treatment of choise for basal cell carcinoma. The greatest risk of recurrence was found for basal cell carcinoma of the medial canthus and for carcinoma larger than 2 cm. There was no significant correlation between positive surgical margins and recidivant rate. For high risk cases, consideration should be given to adjuvant radiotherapy.

Key words: basal cell carcinoma, orbit, surgery

SAŽETAK

Cilj rada je da prikaže iskustva u terapiji bazocelularnog karcinoma orbitalne regije i da utvrdi efikasnost lečenja. Studija je dizajnirana kao prospektivna analiza 111 pacijenata sa bazocelularnim karcinomima orbitalne regije sa minimalnim praćenjem od 3 godine. Opisani su lokalizacija tumora, veličina tumora, histološki tip, hirurška procedura i komplikacije.

Incidenca bazocelularnog karcinoma je bila viša kod muškaraca i u starijoj dobi. Mi smo prikazali tehnike ekscizije i mogućnosti rekonstrukcije i naglasili značaj zadovoljavajuće ekscizije margina. Tokom praćenja zabeležena je stopa recidiva od 9.01%. Najčešće su se javljali recidivi medijalnog kantusa (15.79%). Kod tumora većih od 2 cm stopa recidiva je bila 66.67% solidni bazocelularni karcinom je bio prisutan u 0.46%. Samo 19.05% recidiva se javilo kod tumora sa pozitivnim resekcionim marginama.

Hirurška ekscizija je terapija izbora za bazocelularni karcinom. Najveći rizik recidiva kod bazocelularnog karcinoma je nađen kod bazocelularnog karcinoma medijalnog kantusa i kod karcinoma većih od 2 cm. Nije bilo značajne korelacije između pozitivnih hirurških margina i stope recidiva. Kod visokorizičnih slučajeva trebalo bi razmotriti adjuvantnu radioterapiju.

Ključne reči: bazocelularni karcinom, orbita, hirurgija

INTRODUCTION

Basal cell carcinoma (BCC) is the most common skin cancer of the eyelid, accounting for 80–90% of all malignant tumors. The most important risk factors for BCC are fair skin, inability to tan, and chronic exposure to sunlight. BCC generally grows slowly, invading and destroying the adjacent tissues. It rarely has metastatic spread. Aggressive types of BCC are occasionally observed, especially in young patients.

Histopathological examination of BCCs includes evaluation of amounts of cellular and stroma elements and the level of cellular differentiation. BCC in orbital region could be classified as: solid, adenoid, solidadenoid and superficial form. In solid types the peripheral tumor cell layer shows a specific palisade arrangement. The adenoid BCC resembles glandlike structures and the tumour has a mucoid appearance. Superficial multicentric BCC shows irregular proliferation of tumour tissue attached to the deep epidermis. In most cases there is a low penetration into the dermis.

The various types of treatment described in the literature include: surgical excision, cryotherapy, radiotherapy and laser surgery.

In general, periorbital skin wounds can be repaired by following methods: granulation (secondary intention), side-to-side closure, skin grafts and skin flaps. Having in mind that each defect has multiple repairing options, it is important to establish understandings for all possibilities and choose the one most appropriate for the patient. It is also important to preserve as much normal tissue as possible, particularly in the periocular region, and thereby allow the best chance of a good functional reconstructive result.

The surgery is the most effective treatment option. The procedure can be performed under local or general anesthesia irrespective of the tumor size and reconstructive design. The minimal health tissue margin has to be 3 to 5 mm for small tumor, but larger (1 cm) margins are advised for tumors greater than 2 cm and for recidivant disease.

Free skin grafts are indicated for reconstruction after removal of larger tumours in canthal region. For proper healing different methods of postoperative care are suggested. Pressure bandages were introduced in 1966 by Mustarde, and in 1979 Metha developed a suture technique for skin graft for securing the contact with the wound bed. That is an appropriate method for skin graft either partial or full thickness.

Skin flaps must be designed according to local anatomy and flaps from frontal and cheek region are mostly used.

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PATIENTS AND METHODS

We present 111 surgically treated BCC of the orbital region during the period of 3 years (2001–2003) Minimal follow up was 3 years.

Tumour site was defined as upper lid, lower lid, medial canthal and lateral canthal region.

The BCCs were classified according to TNM system into the three groups: T1 - less than 2 cm, T2 - larger of 2 cm (2–5 cm), and T4 – aggressive tumors.

After history and clinical examination all patients underwent computer tomography (CT) if indicated, and surgical strategy was determined.

Surgical technique

All tumours were excised with a 5 mm margin of clinically health tissue. Aggressive tumors were excised with larger margins (1 cm). All wounds were primary closed. For larger skin defects we used skin grafts and local flaps. In full thickness lid defects we performed complex reconstructive procedures according to Mc Gregor, Mustarde or Hughes. After orbital exenteration defect was reconstructed by skin flap and forehead was grafted.

RESULTS

BCC was found in 51 female and 60 male patients. The gender ratio female: male was 1:1.18

Age of patients ranged from 24 to 84 year. Gender and age distribution are presented in table 1.

Table 1. Gender and age distribution.

		No of patients	%
Gender	Male	60	54.05
	Female	51	45.95
Age (years)	<30	2	1.80
	31–40	5	4.50
	41–50	12	10.81
	51–60	23	20.72
	61–70	26	23.43
	71–80	24	21.63
	81+	19	17.11
total		111	100.00

In 57 cases (51.35%) the tumour site was on the lower lid, in 38 cases (34.24%) on the medial canthus, in 14 cases (12.61%) on the upper lid, and 2 cases (1.80%) on the lateral canthus.

Table 2. The distribution by tumour site.

Tumor site	No of patients	%
Lower lid	57	51.35
Medial canthus	38	34.24
Upper lid	14	12.61
Lateral canthus	2	1.80
Total	111	100.00

The tumour size was distributed as follows: T1 (less than 2 cm) in 97 patients, T2 (2–5 cm) in 6 patients and T4 in 8 patients.

Table 3. The size of BCC in the orbital region.

Tumor size	No of patients	%
T1	97	87.38
T2	6	5.41
T4	8	7.21
Total	111	100.00

The operation was performed under local anaesthesia in 70 cases and general anaesthesia was used in 41 cases because of the extent of the tumour.

Direct closure was performed in 35 cases. In 20 cases the defect was covered with skin graft. In 14 we performed full thickness skin graft harvested from retroauricular area and in 6 patients with partial thickness skin graft from arm region. Larger skin defects were closed with local flaps in 38 cases (figures 1, 2). In 10 cases we observed full thickness lid defects up to 1/3 width and they were reconstructed by different techniques: Mc Gregor's, Mustarde's or Hughes's (figures 3, 4, 5). In 8 patients we performed orbital exenteration due to infiltration through orbital septum (table 4 and figures 6, 7, 8).



Figure 1. Basal cell carcinoma of lower lid.



Figure 2. After tumour excision rotational skin flap performed.

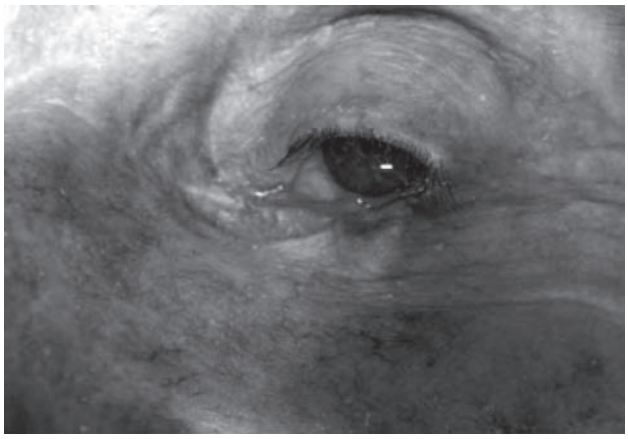


Figure 3. Carcinoma of lower lid.



Figure 4. After ful thickness excision of all lower lid hondromucous graft from nasal septum harvested and sutured for tarsal reconstruction.



Figure 5. Mustarde reconstruction completed vit rotational skin flap.

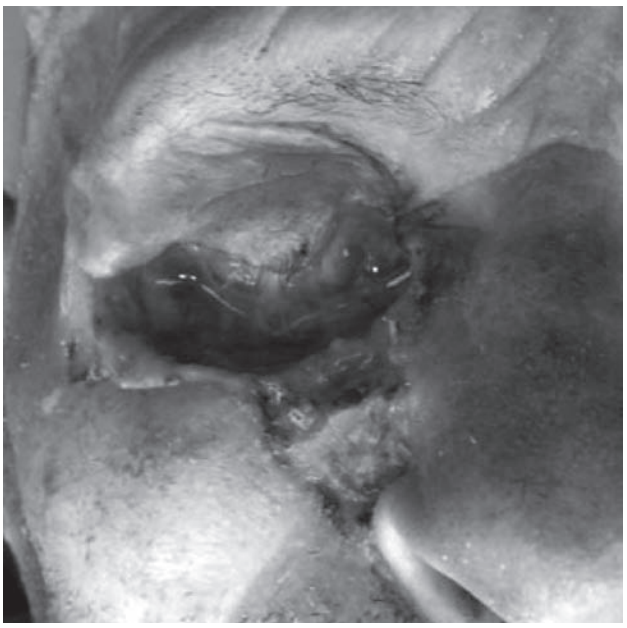


Figure 6. Advanced carcinoma of lower lid.

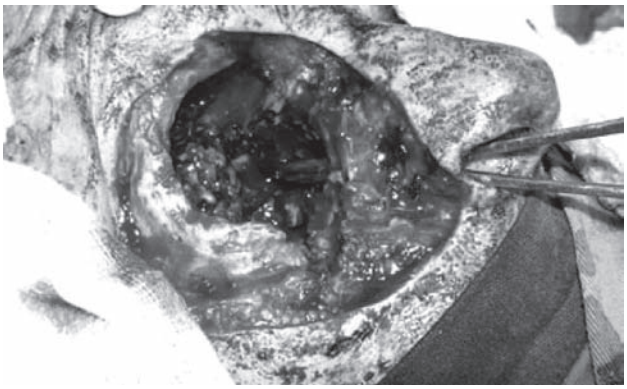


Figure 7. Right orbital exenteration with ethmoidectomy and partial maxillectomy performed.

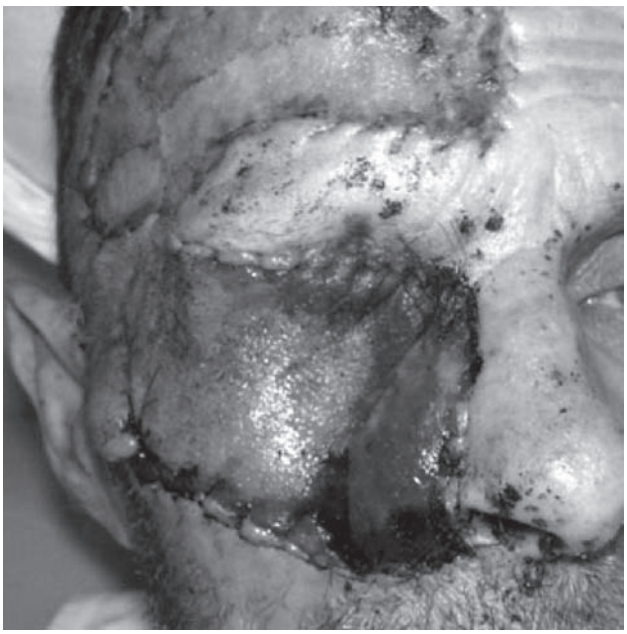


Figure 8. Orbital defect covered by frontal skin flap and secondary defect skin grafted.

Table 4. Type of surgery.

Type of surgery	No of patients	%
Direct closure	35	31.54
Skin grafts	20	18.02
Skin flaps	38	34.24
Full thickness lid reconstruction	10	9.00
Skin flap and graft after orbital exenteration	8	7.20
Total	111	100.00

Distribution by histopathological type was: 86 solid (77.48%), 20 solid-adenoid (18.02%), 4 adenoid (3.60%), and in one case (0.90%) superficial form of basal cell skin cancer.

During follow up we found recurrence rate of 9.01% (10 patients). The recidivant disease was detected in 6 of 38 (15.79%) in medial canthus, in 1 of 14 (7.14%) in upper lid and in 3 of 57 (5.26%) BCC in lower lid. In lateral canthal region the recidivant disease was not detected.

There were 5 (5.15%) recurrent tumours in T1 group of tumours in the follow up period. There were 5 (35.71%) recurrent tumours in T2 an T4 (advanced tumors) group in follow up period.

Tumour size T2 (larger than 2 cm) is predisposing factor for higher recurrence rate (Fisher test p=0.004) Recurrences were found in solid and solid-adenoid types. There was no any statistically relevant connection between histological type and recidivant rate (χ^2=0.97, p=0.808)

From 111 primary tumours, 21 (18.92%) were with positive lateral and/or deep aspect and 90 (81.08%) were with negative lateral and deep margins.

In group of tumours with negative margins there were 6 (6.67%) recurrent tumours in follow up period.

In group of tumours with positive margins we found 4 (19.05%) recurrent tumours. There is no significant connection between positive margins and appearance of recidivant disease (Fisher test p=0.213).

Difference in number of histologically involved margins after primary excision (21) and number of recidivant tumors (10) could be caused by techniques of tissue sampling or processing or, in rare cases, by tissue lost after additional excision in primary treatment. The crucial problem is sample orientation and sampling of specimen edges.

After excision of tumor mass, in 2 cases the defect was covered with local flaps and in 4 cases full thickness lid defects was reconstructed by different techniques: Mc Gregor's and Mustarde's and in 4 cases we performed orbital exenteration.

The operations for BCC recurrent tumors were performed under general anaesthesia in all (10) cases because of the extent of the tumor.

DISCUSSION

The great majority of the patients with a BCC in the orbital region are older than 60 years, and the most common location is the lower lid. In most of the cases BCCs are histologically classified as solid types. A recurrence rate of 9.01% was observed in group of 111 patients. One of the way for avoiding the inoculation of tumor cells in health tissue is that surgical instruments which have previously been used for tumour surgery must not be used for reconstruction (1). It is evident from the group of 10 recurrences that the BCC on the medial canthal region is more likely to recur compared to other lid regions. This may be due to the complex anatomy of the medial canthal ligaments, lacrimal system, and of the orbital septal attachments. Medial canthal region as a place of embryonic fusion line is a high-risk area for deep tumour spread, and perineural and perivascular invasion. Lacrimal system should be preserved but can be harvested for radical excision.

Incomplete excision was found in 18.92% cases. Literature data concerning this problem are different (1, 2, 3). We did not found importance of clearance of resection margins and recidivant rate but with the exception of the medial canthus, periorbital lesions will have a low probability of residual tumour being identified (4).

In our series we presented different reconstructive strategies. Use of local flaps is mostly prefered from other authors (5). According to the surgical margins we found that the 0.5 cm margin is adequate for small lesion (6, 7).

Correct diagnosis and treatment at an early stage permits tumour eradication, preserves functionally important tissues, and allows primary wound closure. Routine ophthalmological examinations should therefore be used as an opportunity to detect lesions in the eyelid region in the earliest stage, especially in patients over 60. It should be kept in mind that surgical excision of the BCC in medial canthal region, particulary its recurrence as highly aggressive tumours is a challenging and demanding procedure. In high risk tumors - for example recidivant cancer in medial canthal region - the application of adjuvant radiotherapy should be considered.

Difference in number of histologically involved margins after primary excision (21) and number of recidivant tumors (10) could be caused by techniques of tissue sampling or processing or in rare cases from tissue lost after additional excision in primary treatment. The crucial problems are sample orientation and sampling of specimen edges.

BCC is most often located on lower eyelids. By histological type, most of BCCs were solid type. The greatest risk of recurrence exists for BCCs of the medial canthus and for carcinoma larger than 2 cm. There is no significant connection between positive margins and recurrent tumours.

Adequate surgical treatment can yield good esthetic results and low recidivant rate.

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