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Giant Basal Cell Carcinoma of The Face and Head: Case Report and Reconstruction Choice

Mufid Burgic¹ *, Nazim Imamovic², Dzelil Korkut³, Adi Rifatbegovic⁴, Musfaha Burgic²,
Gordan Mehmedovic³

1. Al Emadi Hospital, Department of Plastic surgery, Qatar.
2. University Clinical Center Tuzla, Clinic for Plastic and Maxillofacial surgery, Bosnia and Herzegovina, Department of Maxillofacial surgery, Qatar.
3. University Clinical Center Tuzla, Clinic for Neurosurgery, Bosnia and Herzegovina, Qatar.
4. University Clinical Center Tuzla, Clinic for Plastic and Maxillofacial surgery, Bosnia and Herzegovina, Department of Plastic surgery, Qatar.

Corresponding Author: Mufid Burgic, Mufid Burgic, Department of plastic surgery, Al Emadi Hospital, P.O. Box 50000, Doha, Qatar.

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Abstract

It is very rare and uncommon these days to have a patient with advanced and giant basal cell carcinoma (BCC) of face and scalp. The aim of our case report is to present such BCC which affects deep tissue structures, bone structures and brain parenchyma itself, with complications, procedures and reconstructive modality in its treatment. In some cases, combination of surgery and radiotherapy of large BCC of the scalp can result in localized tumor growth control with long-term cosmetic and functional results. Our patient is satisfied with final aesthetic result, values, personal hygiene and quality of life.

Keywords: *Giant BCC, free latissimus flap, reconstruction choice*

Introduction

Basal cell carcinoma (BCC) is one of the most frequent forms of skin cancer. The most common localization of this tumor is in the areas of the body which are exposed to sun, such as head or neck, up to 93% of all cases. BCC originates in basal layer of epidermis and/or the outer root sheath of hair follicles [1,2].

BCC is a very common tumor with rare metastases. It often appears on craniofacial regions, most commonly on localizations which are very complex to be treated surgically, as presented in our case. The most effective treatment of tumor in this region is radical surgical excision, but in very advanced stages surgical and/or radiotherapy and sometimes chemotherapy is needed.

Diagnosis and treatment of these types of tumors does not pose a problem except in the cases when the tumor infiltrates deep structures and tissues such as: bone, dura mater and brain parenchyma (cerebrum) itself. These tumors fall into group of aggressive and locally infiltrative BCCs, which is the result of their longtime growth, thus reaching large dimensions which present surgical and reconstructive challenge. Multidisciplinary approach is necessary in their treatment. A wide excision in face and head region results in large and complex defects. Different treatments for such defects have been described in the literature: skin grafts, pedicle flap and free flap. The procedure of choice is conditioned by various factors: size and localization of the tumor, defect size after tumor excision, and the preference of appropriate graft/ flap to cover the defect.

In this case report we want to present a giant BCC of the left half of face and head, with propagation of tumor into frontoparietal bone, dura mater and an unusual scalp defect reconstruction with free latissimus dorsi flap and titanium mesh. The aim of our paper is to show our experience with giant and invasive BCC of face and scalp, the choice of free latissimus dorsi flap as possible method in

reconstruction of such large defects, as well as the need for multidisciplinary approach in the treatments of such complex cases.

Observation

A 52-year-old male presented to the Clinic for Plastic and Maxillofacial Surgery at University Clinical Center Tuzla (Bosnia and Herzegovina) with a giant basal cell carcinoma on the left side of face and scalp. For more than 4 years, the patient had neglected his illness and had not received any treatments during that period. The tumor had grown in size now measuring 20x25 cm in diameter. The tumor had unpleasant odor; it was ulcerating and bleeding on touch as shown in (Figure 1, 2). The patient's medical record revealed neither previous chemotherapy, radiotherapy, other risk factors nor a history of family tumors. His heart and lung function was normal, while his blood test results disclosed anemia (hemoglobin value 3,92 g/dl) due to constant bleeding, so he felt general weakness and fatigue. As the hemoglobin values were low, the patient was preoperatively given blood derivatives (transfusions).

Brain and neck computed tomography (CT) scan was performed prior to the surgery, and it showed changes of the bone structure on the left temporo-frontal region and on the roof of the orbit with penetration of the basic process to endocranial and infraorbital region.

In the left temporal region, the tumor mass propagates towards the left ear lobe which it infiltrates with propagation into external auditory canal (meatus acusticus externus) up to the upper pole of parotid gland, without enlarged lymph nodes.

Since the tumor extended intracranially, head and neck CT angiography was performed. The same revealed that there are no pathological changes on intracranial arteries. Preoperative incision biopsy confirmed the diagnosis of BCC. Taking into consideration all possible complications, such as intraoperative bleeding, postoperative meningitis, even the possibility of lethal outcome, the surgery was carefully planned.

The surgical team was made up of plastic surgeons, maxillofacial surgeons and neurosurgeons. It was found during the surgery that frontal and partially left parietal bone had been infiltrated with tumor, as well as dura mater, left eyeball and left auricle. BCC was widely excised with clear bone margins, resection of the part of dura mater, which has finally resulted in tissue defect with dimensions of 30x27 cm. But, the tumor had also affected part of the brain parenchyma. During the surgery, the patient was placed in lateral decubitus position, which provided for two teams working simultaneously. One team performed tumor excision, while the other team raised free latissimus dorsi flap and transferred it to the scalp.

Scalp defect reconstruction was performed with free latissimus dorsi flap. The flap was raised on the dominant thoracodorsal artery and venae comitantes. We covered the bone defect with titanium mesh

as presented in (Figure 3). To reconstruct dura mater, we used fascia lata. Microsurgical anastomoses were performed, the recipient blood vessels for anastomoses being artery and facial vein. The muscle was covered with split – thickness skin graft, (Figure 4). Donor region was closed primarily. There were no postoperative complications of the flap nor the donor region. Two months after the surgery, the patient had superficial skin flap necrosis (Figure 5). Necrotic tissue was removed and the defect was regrafted again, which resulted in its healing (Figure 6, 7).

In the period of 14 months after the first surgery and completed radiotherapy, the patient is referred to the hospital again with large defect on the left half of the scalp, dimension about 10x10 cm in diameter, with muscle necrosis and titanium mesh exposure. For the reconstruction of this defect, we used pericranial flap of the right half of scalp. After 1,5 years follow up, the remaining part of latissimus flap has good color and the residual scar on both recipient and donor sites is acceptable.

Pathohistological analysis revealed infiltrative carcinoma basosquamosum (metatypicum) exulceratum pT4 with infiltration of skin, subdermal tissue, muscles, conjunctiva, sclera, retrobulbar fat tissue, left auricle, dura mater and bone structures. The patient is satisfied with the final aesthetic results, values, personal hygiene and quality of life.



Figure 1, 2. A 52-year-old man presented with 20x25 cm fungating giant BCC of the scalp

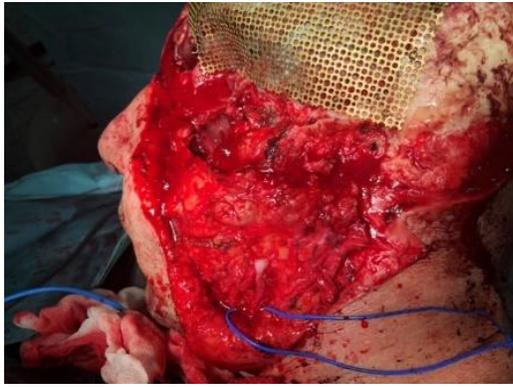


Figure 3. Intraoperative view of near – total scalp defect after resection of giant BBC and mesh cranioplasty



Figure 4. Reconstruction with free latissimus dorsi flap



Figure 5. The scalp reconstruction with the superficial skin necrosis



Figure 6, 7. The result 12 months after treatment

Discussion

Basal cell carcinoma usually grows slowly and rarely metastasizes, in or less than 0.5 percent of cases (3). In rare cases, these tumors may have potentially lethal outcome. If the illness is neglected or poorly treated, BCC invades and destructs the surrounding tissue. In majority of cases (85%) BCC develops on head and neck, presenting as flesh-colored to pink papules in the shape of pearl. [4]

With very large and locally destructive BCCs of head, face and neck there is usually invasion of extradermal structures, such as bones, cartilage, dura mater and sometime even cerebrum, as in our case. Radical surgery procedures involve removal of orbit, outer ear, bone structures and dura mater, leading to large defects which demand for their adequate reconstruction. The reconstruction is very complex and challenging and duration of the procedure itself can result in patient's death. With such complicated cases, multidisciplinary approach is necessary in finding the best solution, which requires team work of plastic surgeons, maxillofacial surgeons, neurosurgeons, anesthesiologists, oncologists, radiologists and other specialties [5,6].

Taking into consideration the size and the depth of defect, giant scalp defects can be reconstructed with skin grafts, local flaps, locoregional flaps or free flaps. Smaller defects with preserved periosteum can be reconstructed with skin grafts, yet they give very poor esthetic outcome, resulting with alopecia on the recipient site, as well as the change of color in comparison to the rest of the skin, which the patient should be informed about prior to the surgery. When there is a need for reconstruction of bone structures including dura mater, then free flap is a method of choice with younger patients who can endure complex and lengthy surgeries. Smaller scalp defects (2-25 cm² in diameter) with no great tensions are possible to reconstruct with some of local flaps (rotational scalp flaps) with skin grafting of the donor site. In some cases, tissue expanders may be very useful in reconstruction of smaller defects

in order to get enough skin (full-length flap) to cover the scalp defect. With larger scalp defects 100 to 200 cm² in diameter free flaps are preferred over regional flaps due to the limits rotational arc [7, 8].

In our case, we opted for one-stage reconstruction, although, with such large tumors, some authors suggest two-stage procedure in order to have a clear view of radicality of tumor excision. The flap of choice was free latissimus flap to cover the defect of the left part of the face and scalp. Intraoperatively we performed ex tempore analyses (intraoperative frozen section) in order to gain clear margins of resection. Resection by depth was not possible as the tumor affected dura mater and infiltrated brain parenchyma. As the reconstruction of bone structures was necessary, we used titanium mesh and fascia lata to reconstruct dura mater. During the procedure, the patient was placed in lateral decubitus position which provided for two teams performing simultaneously. The procedure lasted for 6h.

Being used either as free or pedicle flap, the latissimus dorsi musculocutaneous flap is a remarkable choice in the reconstruction of scalp. One of the main benefits of this flap is its size that can be raised. It presents the method of choice in the reconstruction of large scalp defects, while its thickness and size protect brain parenchyma itself. [9,10].

Other advantages of this flap lie in the fact that the donor site can be primarily closed with no need for other covering flaps. Their advantages also include constant vascular anatomy, numerous musculocutaneous perforators allowing for skin island design, appropriate length of vascular pedicle and satisfactory diameter of blood vessels for microvascular anastomoses. [8,9].

In our case, the patient received radiotherapy postoperatively, as there was incomplete excision with positive margins per depth. Incomplete incision is conditioned by the size of the tumor itself, invasion of extracutaneous structures as well as the localization of the tumor, its histological type and inclination to recurrence.

In this case, as in other cases described in the literature, the surgical excision has to be combined with radiotherapy. Radiotherapy can sometimes cause complications, such as prolonged healing, partial necrosis of the flap, chronic damage to the vascular system, as it happened with our patient [11, 12].

Conclusion

Studying the available literature and comparing it with our case, we have realized that we are dealing with a very aggressive tumor, with poor prognostic parameters. The size of the tumor as well as its propagation intracranially with infiltration of dura mater, showed it was neglected illness, and such cases are not ideal for reconstructive treatment, and there is a great risk in performing surgery as well. The surgical treatment was a challenge for the entire team, which was performed due to palliative reasons in order to stop further bleeding and growth of the tumor, and to provide better quality of life for our patient.

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