

Septic Cervicofacial Phlegmon Following Basal Cell Carcinoma Excision: Life-threatening Complication of Routine Operation in Maxillofacial Surgery?

FLORIAN DUDDE, FILIP BARBAREWICZ and KAI-OLAF HENKEL

Department of Oral and Maxillofacial Surgery, Army Hospital Hamburg, Hamburg, Germany

Abstract. *Background/Aim:* Basal cell carcinoma (BCC) is a frequent tumor entity, especially in the facial region. The standard therapy for BCC is surgical tumor excision which is generally a low-risk procedure. One of the life-threatening surgical risks and complications when removing BCC in the facial area is infection with the possibility to spread across the deep neck spaces as well as systemic inflammation (sepsis). *Case Report:* A 73-year-old patient presented to the emergency department with a swelling of the right cheek, extended towards the neck. Based on his medical history, an outpatient BCC excision of the cheek had been performed the day before. Laboratory tests showed a fulminant inflammatory process of sepsis. Computed tomography (CT) revealed a buccal phlegmon on the right extended towards the deep neck. A diagnosis of septic cervicofacial phlegmon following BCC excision was made. The therapy consisted of intensive care sepsis treatment, surgical relief, and drainage of the phlegmon and a calculated antibiotic treatment (piperacillin/tazobactam, clindamycin). *Conclusion:* Removal of BCC in the facial region is generally a low-risk procedure. A possible complication is postoperative wound infection. In rare cases the clinical picture of a septic cervicofacial phlegmon can develop. Surgical focus

sanitation, broad-based antibiotic therapy and intensive care sepsis management are the key therapeutic pillars of this postoperative complication.

Basal cell carcinoma (BCC) is a frequent tumor, especially in the facial region. BCC is generally known as a disease of the elderly. In addition to specific gene mutations, various risk factors such as increased UV exposure, immuno-suppression, chemical noxes, and chronic wounds predispose to the development of BCC (1). Classically, BCC is most commonly located on sun-exposed areas such as the face, especially the nose (2).

Clinically, BCC is characterized by slow locally destructive growth with a very low tendency to local and/or distant metastases (3). Therefore, the treatment of first choice, depending on the subtype and stage of the BCC, is surgical resection of the BCC with a corresponding safety margin towards healthy tissue (4). This sometimes results in further surgical challenges, especially with regards to surgical defect coverage in the facial area. Other treatment options include radiotherapy, the use of topical medication (e.g., imiquimod) and the use of antibodies and hedgehog inhibitors (5). However, since the standard therapy is the surgical removal of the BCC, and the localization of BCC in the facial region is extremely high, these operations often take place in the form of outpatient procedures with established dermatologists and/or maxillofacial surgeons. As a rule, these excisions are performed under local anesthesia. Every surgical procedure involves general and operation-specific risks, about which the patient is informed preoperatively and must consent.

In addition to the risk of bleeding and scars, one of the main risks, especially in the case of extensive soft tissue surgery in the facial area, is wound infection with/without spreading tendency towards the deep neck spaces (6). This case report illustrates how a standardized and often low-risk surgical procedure can sometimes take a life-threatening course.

Correspondence to: Florian Dudde, Department of Oral and Maxillofacial Surgery, Army hospital Hamburg, Lesserstraße 180, 22049 Hamburg, Germany. Tel: +49 40694717811, e-mail: floriandudde@gmx.de

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Case Report

A 73-year-old patient presented to the emergency department with a swelling of the right cheek, extended towards the neck. Based on the medical history, an outpatient BCC excision was performed in this area the day before without perioperative antibiotic treatment. Apart from arterial hypertension and coronary heart disease, the extended medical history was unremarkable. On the first day of the operation, the patient noticed increasing fever and swelling in the area of the right cheek. Furthermore, the reddening and swelling extended to the area of the right neck.

The clinical examination showed a tender swelling of the right cheek with suture material in situ and cervical reddening of the skin in the tachycardic and hypotensive patient (Figure 1). Laboratory tests showed a fulminant inflammatory process (Procalcitonin=5.7 ng/ml, leukocytes=33.27×10⁹/l, C-reactive protein=447 mg/l), acute kidney failure (creatinine=2.5 mg/dl) and increasing transaminases in the sense of a laboratory-chemical sepsis constellation. Computed tomography (CT) with contrast medium was performed for extended diagnostics. This revealed a buccal phlegmon on the right, extending towards the deep neck (Figure 2).

The therapy consisted of surgical relief and drainage of the phlegmon and a calculated antibiotic treatment (piperacillin/tazobactam, clindamycin). Furthermore, intensive care of the sepsis was performed. The local findings, the laboratory chemical and septic parameters showed a prolonged decline. Two weeks postoperatively the patient was discharged for outpatient treatment without any symptoms. The follow-up controls did not reveal any indication of renewed infection in the cheek area in the sense of an infectious recurrence.

Ethics approval and consent to participate. Ethics approval not applicable. Written informed consent was obtained from the patient.

Consent to publish. The Authors affirm that the human research participants provided informed consent for publication of the images in Figure 1 and Figure 2.

Discussion

Soft tissue surgery in the facial area accounts for a large proportion of surgical procedures in an outpatient setting. In particular, the specialist departments from dermatology and maxillofacial surgery carry out the removal of BCCs in the facial region as standard operations. This case report illustrates how a rare complication, a phlegmon, can sometimes take a septic and therefore life-threatening course in this anatomically sensitive region. Phlegmons differ from abscesses as a form of infection by their sometimes diffuse spread (7). The main pathogens of phlegmon are



Figure 1. Clinical picture at initial patient presentation. There was a pronounced, tense, crimson swelling of the right cheek with subsequent reddening of the skin protruding into the cervicothoracic region.

staphylococci (especially *Staphylococcus aureus*), which can lead to wound contamination with consecutive diffuse purulent spread through minor injuries to the skin or surgical interventions in the soft tissue (8).

Infections in the head and neck region, especially abscesses and phlegmon, require immediate therapy because of the tendency to spread along various anatomical spaces (9). In addition to compression of neighboring structures (tracheal displacements), the greatest risk is the spread of infection into the thorax up to the clinical picture of mediastinitis associated with increased mortality (10). These infections of the head and neck region show different rates of spread and clinical course (11). Furthermore, this initially locally limited inflammation can also result in systemic impairments and clinical signs –



Figure 2. Computed tomography in axial section reveals an extensive swelling of the right buccal region caused by a hemorrhagic-infected cheek phlegmon. Postoperative air inclusions are also recognizable due to basal cell carcinoma (BCC) excision.

sepsis. This is defined as acute, life-threatening organ dysfunction resulting from a dysregulated immune response to a (suspected) infection (12).

In clinical terms, the qSOFA and/or SOFA score have established themselves as reliable instruments in the diagnosis of sepsis (13). In addition to lung function and circulatory function, the organ systems affected are, in particular, the kidneys (creatinine), the liver (bilirubin), the platelet count/hematology and the CNS system in the context of organ dysfunction when dealing with sepsis (12).

Consequently, the therapy of sepsis requires an intensive care setting in order to provide the affected organ systems with appropriate therapy. The main components of sepsis therapy triggered by infections of the head and neck region are the surgical focus sanitation or excision and drainage of the phlegmon with possibly extended airway protection in the sense of a tracheostomy as well as the calculated comprehensive antibiotic therapy.

In general, any open wounds and/or surgical soft tissue interventions in the facial region represent a risk factor for

the penetration of germs. Soft tissue injuries, for example, in the context of accidents or removal of nevi as well as atheromas are generally considered as low-risk operations. However, all of these operations represent a potential threat for soft tissue infections (6).

Strict adherence to hygiene regulations, local and extensive disinfection of the surgical site, and sterile work should also be observed in the context of outpatient surgical interventions with a view to operating conditions that are as germ-free as possible (14). Depending on the extent of the operation, additional prophylactic perioperative antibiotic therapy may be useful (15).

Conclusion

The surgical removal of BCC in the facial region is generally a low-risk and uncomplicated procedure in an outpatient setting. However, the present case report clearly shows how, in rare cases, a postoperative wound infection with the clinical picture of a septic cervicofacial phlegmon can

develop. Surgical focus sanitation, broad-based antibiotic therapy and intensive care sepsis management are the key therapeutic pillars of this postoperative complication.

Conflicts of Interest

The Authors have no relevant financial or non-financial interests to disclose.

Authors' Contributions

KOH, FB, and FD treated the patient and revised the article. FD and FB researched the scientific literature, provided radiological findings, and wrote the article. All Authors gave final approval for publication.

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