

## Large ulcerating metastasizing basal cell carcinoma of the back

Obsežen ulcerozni metastatski bazalnocelični karcinom na hrbtu

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### Abstract

So far, computed tomography (CT) and magnetic resonance imaging (MRI) have been used in the detection of basal cell carcinomas (BCC) metastases. We have used PET-CT postoperatively to detect any further metastases of BCC not visible by other techniques. BCC of the trunk are reportedly larger than those located in the head and neck region. These tumors also have a higher incidence of metastasizing. Although it has been suggested in the literature that the TNM (Tumor–Nodes–Metastases) system is not being used routinely for metastasizing BCC. There have been 19 reports of metastasizing BCC of the trunk. We present a case of a 78-year old male patient with large ulcerating metastasizing BCC of the trunk. The literature is reviewed for similar cases and the TNM system is applied.

### Introduction

Basal cell carcinoma is the most common human malignancy worldwide.<sup>1</sup> Despite the high incidence, basal cell carcinoma has been described to metastasize only in rare cases—0.0028 % to 0.55 %.<sup>1</sup> Criteria for metastasizing basal cell carcinoma are: 1) the primary tumor originates from the skin and not from mucous membranes, 2) metastases are distant from the primary tumor and not an extension to it, and 3) primary

### Izvleček

Do sedaj sta se za odkrivanje metastaz bazalnoceličnega karcinoma (BCC) uporabljali metodi računalniške tomografije (CT) in magnetne resonance (MRI). PET-CT smo uporabljali pooperativno za odkrivanje morebitnih preostalih metastaz, ki se jih z drugimi metodami ni dalo prikazati. BCC trupa so praviloma obsežnejši kot tisti v predelu glave in vratu. Ti tumorji tudi pogosteje metastazirajo. Iz literature je sicer razvidno, da se pri metastatskem BCC klasifikacijski sistem TNM rutinsko ne uporablja. Obstaja 19 poročil o metastatskem BCC trupa. Predstavljamo primer 78-letnega bolnika z obsežnim ulceroznim metastatskim bazalnoceličnim karcinomom trupa. Podan je pregled literature podobnih primerov in uporaba klasifikacijskega sistema TNM.

and metastatic lesion have similar histological subtypes.<sup>1</sup>

Previous publications showed the highest incidence of metastatic basal cell carcinoma located in the face. Snow et al. used the TNM classification system, but its use remains uncommon for metastasizing BCC. The most common sites of metastatic spread were the regional lymph nodes (60 %), followed by the lung (42 %), bone (20 %) and the skin (10 %), perineural invasion seeming a prerequisite for metastasis.<sup>2</sup> Typically, CT or MRI imaging is used for staging of the tu-

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mor.<sup>1-3</sup> PET-CT imaging, commonly used in lesions other than metastasizing BCC, was successfully used to differentiate a recurrent basal cell carcinoma of the skin.<sup>4</sup> However, it has not been used to stage metastasizing BCC.

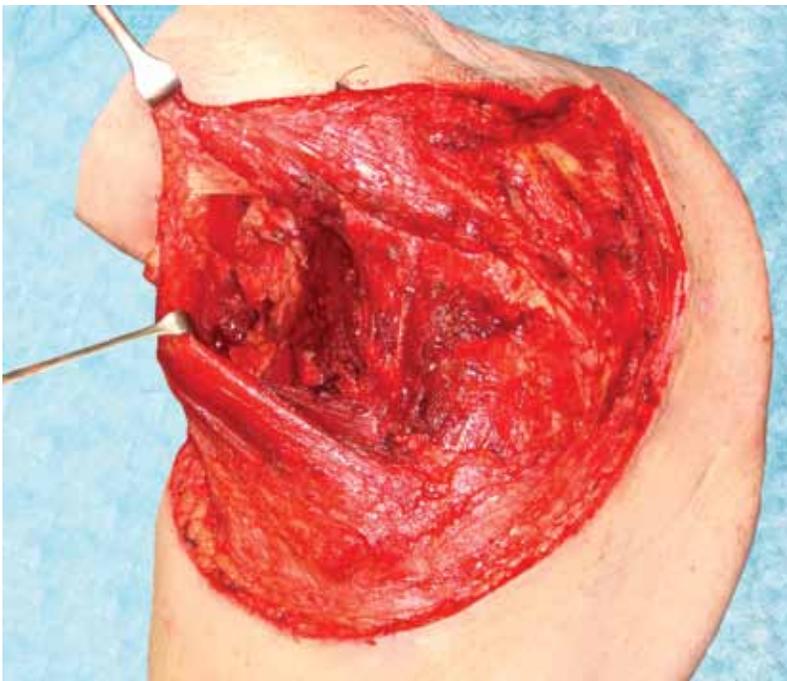
We report a rare case of an ulcerated metastasizing basal cell carcinoma of the

back with regional lymphatic metastasis and perineural infiltrations, using postoperative PET-CT scanning for staging in a metastasizing BCC for the first time.

## Case

The patient is a 78-year-old male farmer without any history of other diseases. In 1994 a basal cell carcinoma was removed from his left scapula. A recurrent lesion appeared in the same location few years later. On admission the patient presented with an erythematous, indurated and ulcerated lesion of about 12 x 8 cm (Figure 1a). Vital functions and blood parameters were within normal limits. CT- imaging showed an infiltration into the infraspinatus muscle and a chronic pulmonary embolism, which was asymptomatic. Subsequently an MRI was done for locoregional staging, demonstrating infiltration of the skin, dermis and infraspinatus, teres minor and major muscles. In addition, one enlarged axillary lymph node was detected, highly suspicious for a lymph node metastasis (Figure 2). According to TNM classification of the American Joint Committee on Cancer (AJCC), the patient was graded T<sub>4</sub>, N<sub>1</sub>, M<sub>x</sub>, classified as stage III.

After discussion at our interdisciplinary tumor board, radical resection followed by radiation therapy was advised. The tumor and lymph nodes from level I and II were removed and sent for histopathology. In addition, parts of the subscapular muscle, and major and minor teres muscles had to be resected (Figure 1b). The resulting defect measuring 20 x 30 x 6 cm was treated initially with wet-to-dry dressings. Histopathology confirmed the presence of an infiltrative basal cell carcinoma with adenoid differentiation. Furthermore, perineural invasion and infiltration of vessels with tumor cells invading the lumen was found. 5/15 lymph nodes in level I showed metastases of the primary tumor and 1/3 in level II. In the positive lymph nodes extracapsular growth was observed (Figure 3). Once histopathology confirmed excision of the tumor mass with clear margin a VAC dressing was applied. After 10 days the wound was covered with a

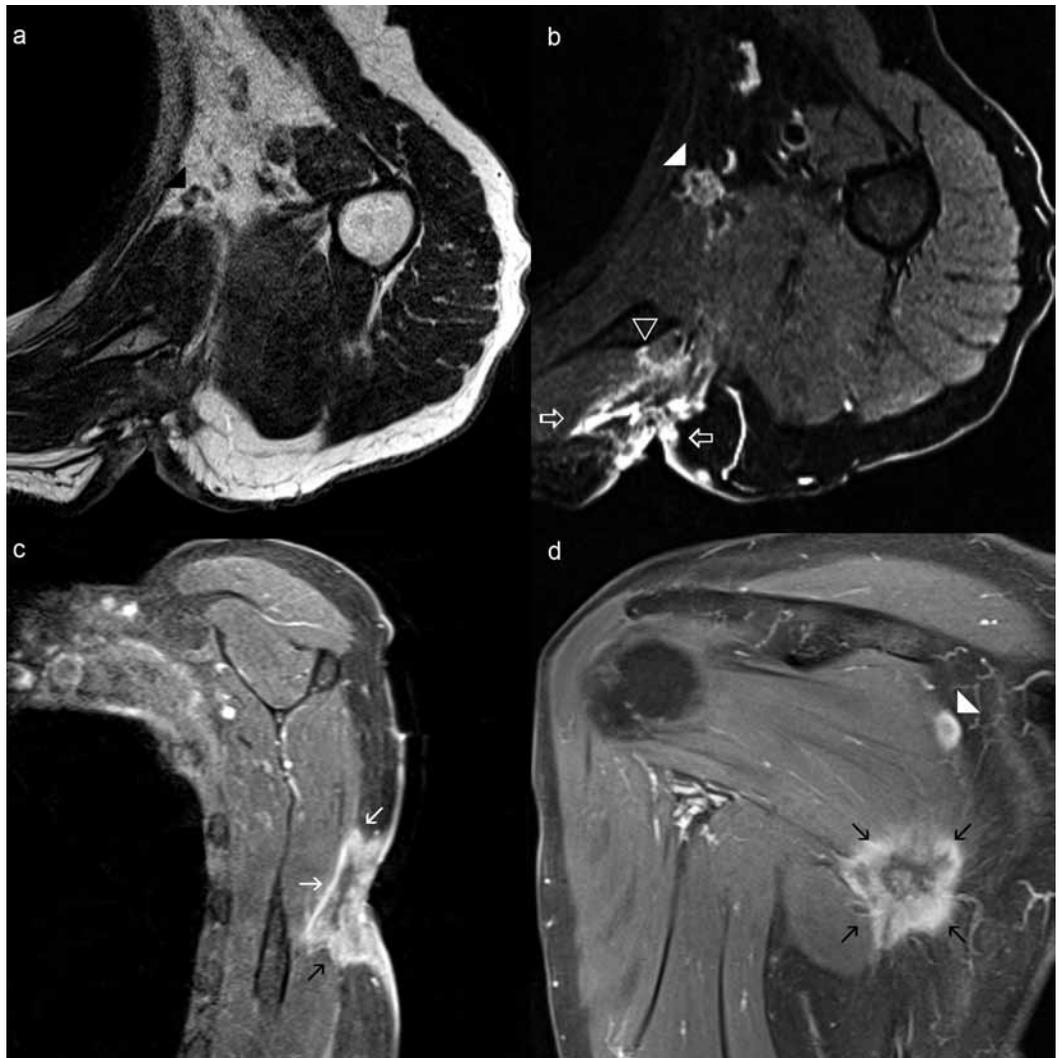


**Figure 1a:** Ulcerated lesion in the left scapula before excision. The basalioma measures 12 x 8 cm in vivo. The left arm is abducted and points towards the top of the image.

**Figure 1b:** Intraoperative view after tumor removal with the teres major, minor, infraspinatus and subscapularis muscles and the completion of the axillary lymph node dissection of levels I and II.

**Figure 2:** Preoperative MRI

On axial images (a, b), the tumor is depicted with high conspicuity on contrast-enhanced T1 weighted fat-suppressed images (open arrows in b) compared to T2 weighted images (a), indicating that there is hardly any peritumoral edema. The basalioma infiltrates the epidermis and subcutis and extends to the periosteum of the scapula without signs of infiltration. Parasagittal contrast-enhanced images indicate a deeper invasion of the muscle more caudally (arrows in c) and the tumor is visualized in a star shape sized 44 x 45 mm on the paracoronal images (arrows in d). Another metastasis was also detected in the craniomedial subscapularis muscle (white arrowhead in d) at a distance of 3 cm from the primary basalioma. Also, a lymph node metastasis can be seen on the ventral fascia of the subscapularis muscle (12 mm in diameter, white arrowhead in b). There are signs of infiltration of the fascia and of central necrosis, indicated by lower signal intensity in the centre of the lymph node (b). Note, for comparison, the normal lymph node with the fatty sinus more ventrally (b).



split-thickness skin graft from the thigh. The staging was completed by PET-CT. No further metastases were found. Only low FDG enhancing tissue located at the surgical site of the scapula was observed and no further lesions were found. Six weeks after tumor resection the patient received radiotherapy. The skin-grafted region received 54 Gray while the selected regions received additionally a cumulative dose of up to 66 Gray.

## Discussion

Basal-cell carcinoma most commonly develops on sun-exposed skin leading to formation of thymine dimmers. However, BCC also develops as a result of basal-cell nevus syndrome, or Gorlin's syndrome. The cause of the syndrome is a mutation in the PTCH-1 tumor-suppressor gene at chromo-

some 9q22.3, or a mutation in the SMO gene, which is also on the hedgehog pathway.<sup>4</sup>

In our patient imaging studies using CT showed infiltration into the infraspinatus muscle while MRI revealed additional infiltration into major and minor teres muscles of the same side as well as lymph node infiltration. The literature suggests CT and MRI imaging to be a gold standard when searching for metastases.<sup>1,3</sup> In the field of Oncologic Surgery PET-CT is the standard method for staging tumors other than metastasizing BCC. Beer and Waibel have reported the use of PET-CT in non-melanoma skin cancers and recommend this tool for the detection of non-melanoma tumors by high enhancement of cutaneous lesions.<sup>4</sup> We performed a postoperative PET-CT scan in search of further metastatic spread. A low FDG enhancement was found at the site of surgery. No other locations of tracer enhancement were

**Table 1:** Literature review on MBCC of the trunk

Author	Location	Age at presentation	Sex	Time from 1 <sup>st</sup> to 2 <sup>nd</sup> recurrence	Site metastasis
Lo JS et al. (2)	Back	N/A	N/A	N/A	Perineural
Smith JM et al. (3)	Chest	60 years	Male	N/A	Bone/Skeleton
Chandler J et al. (5)	Upper left chest	76 years	Male	5 years	LKN local
Keenan R et al. (6)	Lower anterior abdominal wall	52 years	Male	N/A	Lung, LKN
Menz et al. (7)	Back and arm	45 years	Male	12 years	LKN local
Degner RA et al. (8)	Left back	58 years	Male	4 years	Lung, local LKN
Kleinberg C et al. (9)	Upper back	65 years	Female	N/A	Bone/Skeleton
Shertz WT et al. (10)	Nipple	59 years	Male	2 months	LKN local
Lambert WC et al. (11)	Shoulder	70 years	Male	N/A	LKN local, perineural
Beck HI et al. (12)	Lower right back	59 years	Female	N/A	LKN local
Mehregan AH (13)	Back Back Back Back Back Back Back Abdomen	47 years 48 years 56 years 40 years 69 years 55 years 58 years 56 years	Male Female Male Male Male Male Male Female	N/A	N/A
El Ferzeli G. et al. (14)	Lower abdomen	39 years	Female	N/A	Several local organs
<i>Our case</i>	<i>Back</i>	<i>78 years</i>	<i>Male</i>	<i>15 years</i>	<i>LKN local</i>

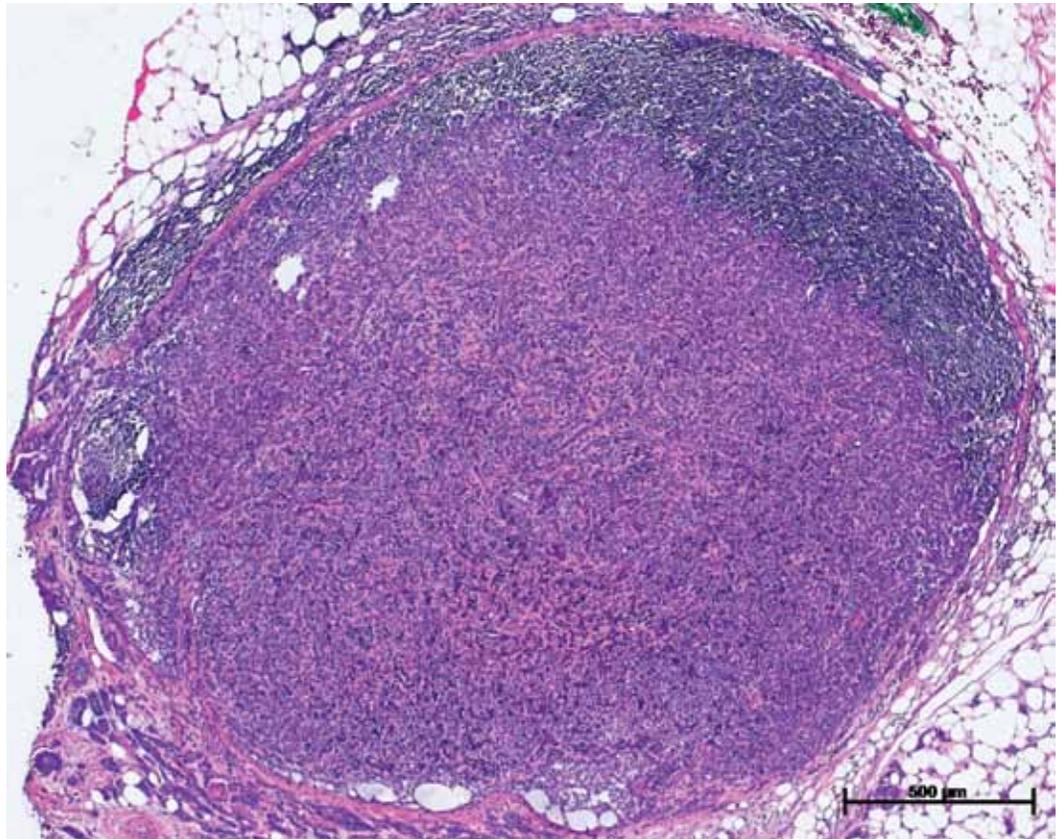
discovered, suggesting no presence of metastases and further skin lesion at that time.

The most common location for metastasizing BCC is the face, the ear being prevalent, followed by the cheek and the forehead. In their review, Lo et al. showed that the distribution ratio of facial to non-facial BCC sites was 67.6 % to 32.4 %, respectively.<sup>2</sup> The time of onset of metastasis in our patient was 15 years comparable to the literature. Although the incidence of invasive BCC of the trunk is lower, rate of metastasis is higher as compared to the face.<sup>1,2,12</sup> So far, there have been 19 cases of metastasizing BCC reported (Table 1). Male to female ratio is 2:1. The highest incidence has been in the back (11 cases), the mean age at first presentation was 56 years. The mean time from the first presentation of BCC to the second BCC metastasizing was 5.62 years. 5/19 patients had metastatic spread to local lymph nodes, 2 to the lung and 2 to the skeleton. Our patient presented with metastases to the axillary lymph nodes at a rather advanced age

of 78 years. Metastases of the BCC might also be dependent on the invasion of deeper structures, such as bone, parotid gland or sinus<sup>1-3,9</sup> or, as in our patient, with invasion of the infraspinatus, and major and minor teres muscles. Furthermore, the number of primary tumors seems to facilitate BCC metastatic spread as well. Only few cancer registers and literature reviews have collected data on metastasizing BCC, which seems to be necessary with respect to population aging and higher incidence.<sup>1-14</sup> In addition, differentiation of primary tumor location and application of the TNM system might be a useful tool to reconstructive surgeons to initiate best treatments. When applying the TNM system in patients with metastasizing BCC of the trunk, the majority of tumors were graded as T2 and T3, most being in the T3 group. Our patient was classified as T4, N1, MX, Stage III.

In conclusion, we report on a patient with BCC of the trunk that infiltrated underlying muscles and metastasized to the regional

**Figure 3:** Lymph node metastasis of a basal cell carcinoma with focal infiltration of the perinodal adipose tissue and minimal fibrosis. Haematoxylin and Eosin staining.



lymph nodes. According to our review of metastasizing BCC of the trunk, more than 80 % of all metastasizing BCC originate from lesions larger than 5 cm. Patients with large BCC of the trunk have a higher probability of developing metastasizing BCC than patients with BCC of other locations. These patients should be monitored for at least 10 years, especially as metastases often occur several years after excision of the primary tumor. We recommend PET-CT in addition to traditional imaging such as MRI and CT scan for staging of recurrent metastasizing BCC.

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