Case and Review

Intravascular Basal Cell Carcinoma Hiding under a Keratoacanthoma

Austin Dunn^a Raymond E. Kleinfelder^b Brad P. Glick^c

^aCenter for Clinical and Cosmetic Research, Aventura, FL, USA; ^bAdvanced Skin and Mohs Surgery Clinics, Chicago, IL, USA; ^cGlick Skin Institute, Margate, FL, USA

Keywords

Basal cell carcinoma · Keratoacanthoma · Intravascular basal cell carcinoma

Abstract

A 79-year-old male presented for removal of what was proven to be a keratoacanthoma. Additional tissue removed deep to the initial lesion revealed intravascular basal cell carcinoma (BCC). Intravascular BCC is exceedingly rare with only 8 cases previously reported in the literature. Intravascular BCC may be associated with more aggressive subtypes. Intravascular infiltration is more common in metastatic BCC, but this finding may not imply causality. More data are required in order to determine prognostic implications of intravascular BCC and to develop a protocol for managing patients with this unique finding.

© 2021 The Author(s).
Published by S. Karger AG, Basel

Introduction

Basal cell carcinoma (BCC) is the most common human neoplasm and generally carries a favorable prognosis. Tumor extension into blood vessels is a rare finding in nonmetastatic BCC with the current case being only the ninth to be reported in the literature. The significance of this finding is not well understood. Milam et al. [1] claim that vascular invasion enhances blood flow and thus encourages tumor growth. Other authors claim that this finding has little prognostic significance for BCC [2]. It is known that vascular or lymphatic invasion of melanoma correlates with a poor prognostic value. BCC neoplastic cells, however, are different in that they rely on the local stroma for survival, which is why intravascular infiltration may be an insignificant finding [3]. We report a

Correspondence to:
Austin Dunn, a.dunn@admcpr.com

Fig. 1. Initial tumor taken for biopsy, clinically suspicious for SCC/KA. SCC, squamous cell carcinoma.

Fig. 2. Histopathology demonstrating intravascular BCC (H&E, ×10). BCC, basal cell carcinoma.

patient with an incidental finding of intravascular BCC just deep to a biopsy-proven keratoacanthoma.

Case Report/Case Presentation

A 79-year-old Caucasian man with a history of severe actinic damage due to chronic sun exposure melanoma, dysplastic nevi, and >20 BCC and squamous cell carcinomas (SCC) presented for a full-body skin examination. On the left lower leg, there was a solitary, tender, crusted pink nodule with a central crater clinically consistent with a keratoacanthoma shown in Figure 1. The tumor was biopsied, and due to the high likelihood of the diagnosis, the lesion was subsequently treated with electrodesiccation and curettage. Additional tissue, including the base and periphery, was sent for pathologic examination to ensure eradication of the depth of the tumor. The initially biopsied lesion was histopathologically consistent with squamous cell carcinoma, keratoacanthoma type. Histopathologic review of the additional tissue demonstrated an intravascular BCC shown in Figure 2.

After informing the patient of the diagnosis and discussing treatment options, the patient elected to have a routine excision. The total excised diameter measured 2.4 cm, and the final wound length was 5.2 cm. The incision was extended down to the depth of the fascia. Pathologic examination confirmed clearance of tumor margins with no residual BCC or SCC. Two

days postoperatively, the patient complained of pain and bleeding of the surgical site and was found to have a postoperative hematoma. Venous Doppler showed no evidence of deep vein thrombosis, X-ray was negative for any acute process, and the hematoma resolved with compression.

Discussion/Conclusion

The 8 previous case reports of nonmetastatic BCC with vascular infiltration are summarized in Table 1 [1, 3–9]. Six cases were histologically infiltrative, morpheaform, or sclerosing, features associated with more aggressive behavior and a higher risk of metastasis [1, 3–5, 8, 9]. Six cases were treated with Mohs micrographic surgery and 2 with surgical excision. Two patients received adjuvant radiation therapy to the tumor bed [3, 4]. Lonie et al. [4] reported the use of radiation due to the unknown attributable risk of intravascular infiltration. Mazloom et al. [3] elected to use adjuvant radiation due to presence of perineural invasion (PNI), and the patient in that case experienced tumor recurrence 4.5 years after treatment. That was the only case that reported tumor recurrence and was also the only one with PNI, suggesting that PNI may be a more aggressive feature than vascular infiltration.

Metastatic BCC (MBCC) is rare with an estimated incidence ranging from 0.0028% to 0.55% [10, 11]. Lymphovascular infiltration of MBCC has been reported with an incidence of 25% [11]. However, this may be a finding of advanced BCC rather than a characteristic of MBCC. As the tumor grows, neoplastic cells may infiltrate the vasculature, just as cells invade other surrounding tissue.

The limited follow-up data for all the other case reports present a challenge in interpreting the significance of vascular infiltration. Adjuvant therapy with radiation therapy should be considered in patients with other high-risk features such as PNI, but the finding of intravascular BCC alone may not warrant treatment above the standard of care.

Vascular infiltration of nonmetastatic BCC is a rare finding with unknown significance. The literature lacks a consensus on the best treatment for tumors with this unique finding. Two case reports described using radiation therapy as an adjuvant, while the other 4 had no adjuvant therapy. MBCCs have higher incidence of vascular infiltration, but this may simply correlate with advanced tumor progression. More reports on the presence of intravascular BCC with sufficient follow-up data are needed to determine its prognostic implications.

Statement of Ethics

The subject in this manuscript has given his written informed consent to publish his case (including publication of images). Information revealing the subject's identity has been removed. Ethical approval was not required for this case report. A waiver of approval was granted by Dr. Mark Nestor, MD, PHD, Director of the Center for Clinical and Cosmetic Research.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Table 1. Case reports of nonmetastatic BCC with vascular infiltration

Case	Age/sex	Location	Size, cm	Previous treatment	PNI	Histology of tumor	Treatment	Adjuvant therapy	Outcome
Milam et al. [1]	75/M	Left nasal side wall	2.0 × 1.1	No	No	Nodular and morpheaform	MMS (3 stages)	No	Not reported
Mazloom et al. [3]	61/M	Scalp	5 linear scar	Recent attempt with excision with positive margins	Yes	Infiltrative	MMS (4 stages)	Radiation	Recurrence 4.5 years after initial encounter with bone marrow infiltration
Lonie et al. [4]	81/F	Right nasal tip	0.8 × 0.8	No	No	Micronodular and sclerosing	Surgical excision	Radiation	No recurrence after 4 months
Machan et al. [5]	51/M	Upper chest	0.9 × 0.4	No	No	Micronodular and infiltrating	Surgical excision	No	Not reported
Shih et al. [6]	76/M	Lateral shoulder	2.8 × 2.1	Shave biopsy and destruction 6 months prior	No	Metatypical	MMS (2 stages)	No	No recurrence after 10 months
Shea et al. [7]	96/F	Right posterior helix	1.6 × 1	No	No	Irregular basaloid cells	MMS (2 stages)	No	No follow-up due to age
Slutsky et al. [8]	60/M	Right anterior parietal scalp	1.5 × 1.1	No	No	Infiltrative	Surgical excision	No	Healthy at 1 year follow-up
Muzumdar et al. [9]	63/F	Nasal dorsum	Not reported	No	No	Infiltrative	MMS (2 stages)	No	No recurrence after 5 months

BCC, basal cell carcinoma; PNI, perineural invasion; MMS, Mohs micrographic surgery.

Funding Sources

The authors received no funding for any aspect of this manuscript.

Author Contributions

All authors have given substantial contributions to this manuscript. All authors contributed to each draft of this manuscript, and the work of revising it was important for the intellectual content. All authors have approved the final version of this manuscript. All authors have agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Data Availability Statement

The data used to create this case report are not available to the public due to potential violations of HIPPA laws.

References

- 1 Milam E, Bogart M, Manolson P. Basal cell carcinoma with intravascular invasion: a therapeutic conundrum. *Dermatol Surg*. 2016;42:776–9.
- 2 Robinson JK, Dahiya M. Basal cell carcinoma with pulmonary and lymph node metastasis causing death. *Arch Dermatol*. 2003;139:643–8.
- 3 Mazloom S, Rich M, Grider D, Phillips M. Basal cell carcinoma with intravascular invasion: a case report and review of the literature. *Dermatol Online J*. 2018;24(10):13030.
- 4 Lonie S, Niumsawatt V, Castley A. A prognostic dilemma of basal cell carcinoma with intravascular invasion. *Plast Reconstr Surg Glob Open*. 2016;4:e1046.
- 5 Machan M, Kroh JM, Hunt E, Fraga G. Letter: basal cell carcinoma with vascular invasion. *Dermatol Online J*. 2012;18(4):13.
- 6 Shih S, Dai C, Ansari A, Greenwald J. Metatypical basal cell carcinoma with intravascular invasion. *Cureus*. 2018;10(10):e3401.
- 7 Shea K, Weinberger CH, Cook D. Intravascular basal cell carcinoma. *Dermatol Surg*. 2016;42:123–4.
- 8 Slutsky J, Mariwalla K, Jones EC. A case of intravascular basal cell carcinoma without evidence of end-organ metastasis. Stony Brook, NY; Brook University Medical Center; 2021 May. Available from: https://www.mohscollege.org/annualmeeting/2010/accepted_posters.pdf.
- 9 Muzumdar S, Stewart CL, Feng H. Rare case of a basal cell carcinoma with intravascular invasion. *Int J Womens Dermatol*. 2020;6(4):334–5.
- 10 Wadhera A, Fazio M, Bricca G, Stanton O. Metastatic basal cell carcinoma: a case report and literature review. How accurate is our incidence data? *Dermatol Online J*. 2006;12(5):7.
- 11 Tang S, Thompson S, Smee R. Metastatic basal cell carcinoma: case series and review of the literature. *Australas J Dermatol*. 2017;58(2):e40–3.