Case Report

A Case of Non-pigmented Basal Cell Carcinoma Involving a Wide Subclinical Extension

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ABSTRACT

Pigmented basal cell carcinoma (BCC) is more common in Asians than in Caucasians. In Asian patients, the boundaries of BCC are clear due to the presence of pigmentation, and the recurrence rate after conventional wide resection is low. However, determining the appropriate surgical margins for non-pigmented BCC is difficult, even with dermoscopy. In addition, subclinical extension of BCC may complicate the case further and require several rounds of Mohs surgery.

Here, we report a case of a 39-year-old female patient, who was diagnosed initially with Pigmented BCC typical for Asians⁷ and underwent a resection. However, an area of extensive non-pigmented subclinical extension was found later, which required four additional rounds of resection. During the initial dermoscopic examination and first surgical resection in this patient, arborizing blood vessels were found around the ulcers and pigmented sites; however, there were no indications of any other widespread non-pigmented lesions.

The following characteristics have been reported previously for patients getting subclinical extension: 1) being an elderly male; 2) Fitzpatrick skin type I; and 3) a history of BCC. As our patient did not have any of these characteristics, this case was considered to be unusual. After four rounds of excision, we could completely remove widespread non-pigmented lesions.

Key words : basal cell carcinoma, large subclinical extension, Mohs surgery, non-pigmented basal cell carcinoma

Introduction

Basal cell carcinoma (BCC) is a benign skin tumor with a high incidence rate¹⁾. The pigmented BCC is more common in Asians than in Caucasians^{1,2)}. In Asian patients with BCC, the tumor boundaries are clear due to pigmentation and the recurrence rate after conventional wide resection is low¹⁾. In addition, a single round of Mohs surgical resection is usually sufficient in Asian patients with BCC³⁾.

Around 16% of typical Asian patients with BCC³⁾ do not have pigmented lesions¹⁾. Due to the lack of pigmentation, such cases are difficult to diagnose⁴⁾. In addition, non-pigmented BCC lesions require more rounds of Mohs surgery than do pigmented lesions⁵⁾.

Here, we report a case of an Asian patient, who was diagnosed with a standard BCC and underwent a resection;

however, a non-pigmented subclinical extension was discovered later, which required four additional rounds of resection.

Patient

The patient was a 39-year-old Japanese female. She had a palpable induration on her left cheek for about 10 years, which started bleeding 8 months prior to her visit to the hospital. Dermoscopy revealed the presence of ulcers and arborizing blood vessels in the indurated region (Fig. 1a and b). Her biopsy results confirmed the lesion as BCC (Fig. 2a and b). Dermoscopic examination did not reveal any presence of an additional non-pigmented lesion. In addition, neither did the patient have any familial or medical history, nor did any investigation reveal the presence of a basal cell nevus syndrome.

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Fig. 1.
a: Clinical finding at the first visit. Small ulcer was surrounded by pigmented skin. The red circle indicates the area where the tumor was present after a total of five resections.
b: Dermoscopic image of the pigmented lesion at the first visit. And showing three biopsy sites, arborizing vessels, ulceration with scale crust, blue gray ovoid nests, and brownish macules.

Fig. 2. Biopsy specimen.
a: At low magnification, hematoxylin and eosin stain (HE) 40×.
b: At high magnification, HE 100×.
Nodular nests consisted of basaloid cells in the dermis. Peripheral palisade arrangement of basaloid cells and mucin deposition were seen around the nests. These observations led to the diagnosis of basal cell carcinoma.

Under general anesthesia, the pigmented site and arborizing vessels were resected with a margin of 5 mm, followed by flap reconstruction of the resected site (Fig. 3a and b). A positive lateral margin was diagnosed based on the examination of the resected specimen (Fig. 4 and Fig. 5a); therefore, the first additional round of resection was performed 5 mm away from the suture line (Fig. 4 and Fig. 5b). The lateral margin was still positive; hence, a second excision was performed 7 mm away from the open wound (Fig. 4 and Fig. 5c). Since the lateral

margin was found to be positive after the second excision as well, a third excision was performed 10 mm away from the open wound. Finally, after the fourth round of additional resection (10 mm from the open wound), the tumor margin was found to be negative (Fig. 4 and Fig. 5e).

Histopathologically, the majority of the lesion was determined to be a micronodular BCC (Fig. 5d). The lesion infiltration was found to be mostly restricted to the lower dermis layer; however, minor infiltration was also observed in the upper adipose tissue in some regions. No obvious nerve infiltration was detected.

Two months after the initial surgery (Fig. 6), the wound was reconstructed using a cervicofacial flap, under general anesthesia. The back of the ear was repaired using a full-thickness skin graft taken from the supraclavicular fossa. No induration or tumor recurrence was observed 12 years after surgery (Fig. 7).

Discussion

The average age reported for a BCC patient is 70.7 years¹⁾. However, our patient was a relatively young female. Studies in Caucasians suggest an increasing incidence of BCC in younger females⁶⁾. This trend for BCC could also be true among young Asian females and warrants further investigation. Our patient initially complained of induration around 10 years ago; therefore, it is possible that she had already developed BCC at that time.

Previous reports on dermoscopic findings of non-pigmented BCC showed that arborizing blood vessels and ulcers, found in 84% and 21% of the patients, respectively, could be useful for diagnosis of non-pigmented BCC⁴⁾. Our patient lesion also exhibited similar features of non-pigmented BCC; therefore, we performed histopathology on the biopsied lesion, which

Fig. 3. The first tumor excision.

- a: The tumor was excised with a safety margin of 5 mm from pigmentation and arborizing vessels.
b: A positive margin was diagnosed from the excised tissue specimen, and the first additional resection was performed 5 mm away from the suture line. The arrowhead indicates the location of the excised tissue specimen.

Fig. 4. The region marked with blue indicates the initial tumor resection area.

The regions marked with black indicate four additional resection areas. Every subsequent round of excision is marked by a thicker black boundary.

The basal cell carcinoma existed in the region marked with red.

confirmed our diagnosis of non-pigmented BCC.

In Caucasians, dermoscopic findings such as arborizing blood vessels, ulceration, and shiny white structures, are used as criteria for determining the excisional margins of non-pigmented BCC; however, reports suggest that these criteria may not be sufficient to determine the surgical margins accurately⁷⁾. This turned out to be particularly true with our patient, as the excisional margins drawn initially were not sufficient and multiple rounds of excision had to be performed to remove the tumor cells completely. Some reports suggest using hyperspectral imaging system⁸⁾, and optical coherence tomography⁹⁾ for determining the appropriate surgical margins for BCC; however, even the results from these techniques require further evaluation.

First choice for BCC treatment is resection. The surgical

margin is determined on the basis of the type of the lesion, histology results, and its size and location¹⁰⁾. If a tumor has clear boundaries and a diameter ≤ 20 mm, a surgical margin of 4 mm is recommended¹¹⁾. Depending on the histological type, the appropriate resection margin may differ: for instance, the recommended resection margin for sclerodermiform BCC is 13–15 mm¹²⁾. The face, and scalp are considered to be high-risk sites for tumor recurrence. In high-risk cases, it is suggested that sufficient resection margins should be secured to prevent tumor recurrence. As per recommendations of the Japanese Dermatological Association, intraoperative frozen section diagnosis and two-stage surgery should be used in combination to reduce the risk of tumor recurrence¹³⁾.

As our patient required additional resection, it would have been better if the wound was not closed during the first surgery. In addition, it was difficult to foresee initially that the skin tissue harvested close to the wound site for flap reconstruction would make the subsequent treatment rounds challenging. After the first resection, tumor cells were probably left behind, around the suture site or under the flap. To remove these cells in the subsequent excision rounds, the suture area was excised and analyzed, and the initial flap and the superficial facial muscles were removed. The wound was then reconstructed by a cervico-facial flap.

Among Caucasians, the cases that require ≥ 3 rounds of Mohs surgery are classified under extensive subclinical spread¹⁴⁾. This holds true for our patient as well. The previously reported characteristics for patients with a marked subclinical extension include: 1) elderly males; 2) Fitzpatrick skin type I; and 3) a history of BCC of the following types – basosquamous, metatypical, micronodular, infiltrative, morpheiform, and sclerosing type¹⁴⁾. In the case reported herein, the BCC was micronodular, which is an aggressive form of tumor; however,

Fig. 5. Tissue specimens.

- a: An 8× image of the tissue excised from the first operation, showing a lateral positive margin (right side).
- b: A 10× image of the tissue resected from the first additional excision, performed on both sides of the suture (arrowhead). The area to the right of the arrowhead was towards the eye, which was still positive.
- c: A 10× image of the tissue excised from the second additional excision. The outer side of the lateral margin was still positive.
- d: A 10× image of the tissue excised from the third additional excision. The outer side of the lateral margin was still positive. Histopathologically, the majority of the lesion was micronodular type BCC.
- e: A 10× image of the tissue excised from the fourth additional excision. A negative margin was finally achieved at this stage.

Fig. 6. Tumor had spread anteriorly and laterally from the initial location.

Negative margins were achieved after the fourth additional resection. The final resection area was about 20 times larger than the original pigmentation and ulcer area.

our patient did not exhibit any other clinical factors mentioned above. Thus, this case was considered unusual.

Here, we misdiagnosed the BCC as a standard pigmented BCC and mainly resected the pigmented site in the first operation. However, the BCC had a wide subclinical non-pigmented area, which was difficult to diagnose preoperatively, even with dermoscopy. If Mohs surgery is not possible, it is considered necessary to perform the reconstruction of the lesion area, after careful evaluation of the stump of the resected specimen.

Our patient was a relatively young female, who are generally considered to be at a low risk of developing BCC; however, it is necessary to investigate whether basal cell carcinoma is increasing in young Asian women.

Fig. 7. Face photographs taken 3 years after cervico-facial flap reconstruction. There was no tumor recurrence twelve years after surgery.

Conflicts of interest

The named authors have no conflict of interest, financial or otherwise.

Financial disclosure statement

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