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Case report

Photodynamic therapy for basal cell carcinoma of external auditory canal: A case report

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ABSTRACT

Background: Basal cell carcinoma (BCC) that occurs in the external auditory canal (EAC) is rare. Currently reported cases are mainly treated with surgical resection. Here, we described an early-detected BCC of the EAC, which achieved good results with photodynamic therapy (PDT).

Methods: 5-aminolevulinic acid (5-ALA) solution was applied on the tumor and its surrounding area of 0.5 cm normal skin. The skin lesion was encapsulated with sterile plastic film and covered with black film to avoid light. Then a special semiconductor laser fiber with 635 nm wavelength red light was directly inserted into the EAC to irradiate the lesion.

Results: The wound was healed. After 1 year of follow-up, there was no recurrence of the tumor.

Conclusion: Our case shows that PDT for BCC of the EAC can also achieve good results. It adds a new treatment option for BCC of EAC patients, especially for those who cannot or refuse to use surgery.

1. Introduction

Basal cell carcinoma (BCC) is the most common malignant tumor in the skin, but BCC that occurs in external auditory canal (EAC) is very rare, with an annual incidence of about 1 in 1 million [1]. Currently reported BCC of the EAC are mainly treated with surgical excision. Temporal bone resection may be required for canal involvement; auricle resection and reconstruction may be required for extensive lesions. Therefore, some patients may suffer from great trauma and pain. In this case, we describe a BCC of the EAC, which achieved good results with photodynamic therapy (PDT) and no recurrence after 1 year of follow-up. It adds a new treatment option for BCC of EAC patients, especially for those who cannot suffer or refuse to use surgery.

2. Case report

An 80-year-old female came to our hospital on May 25, 2018 due to the ulceration of the right EAC suffering more than half a year. The patient had a yellow bean-sized brown nodule on the right EAC with no obvious incentive six months ago. Later, the bulge was gradually enlarged and invaded the skin of the EAC. The skin lesion was depression in the center, ulceration and exudation occurred. The surface was formed a black scar with itching. After that, the ulcer surface slowly spread to the periphery and the exudate increased. The patient has not been treated before. For further diagnosis and treatment, she came to the dermatology department of our hospital.

The patient was healthy and had no history of trauma. There was no history of similar diseases in her family. Physical examination: In general, the superficial lymph nodes were not touched and swollen, and no obvious abnormality was observed in each system. Dermatological examination: A brown plaque of about 1.5 cm × 0.8 cm was seen on the right EAC. The surface was ulcerated, exuded, with black-crusted ridges, the surrounding dike rose and the boundary was clear (Fig. 1a). Laboratory tests: blood and urine routine, liver and kidney functions were normal. Skull CT: density shadow of soft tissue in right lateral auditory canal, nodular protuberance or no erosive destruction of surrounding bone structure was observed (Fig. 1b). Histopathology showed that dermal cord-like irregular basal-like cell mass proliferation was observed in the dermis, and the periphery of the proliferating cell was arranged in a palisade shape. The contractile space was visible (Fig. 1c, d). Based on clinical and histopathology, the diagnosis of BCC was made.

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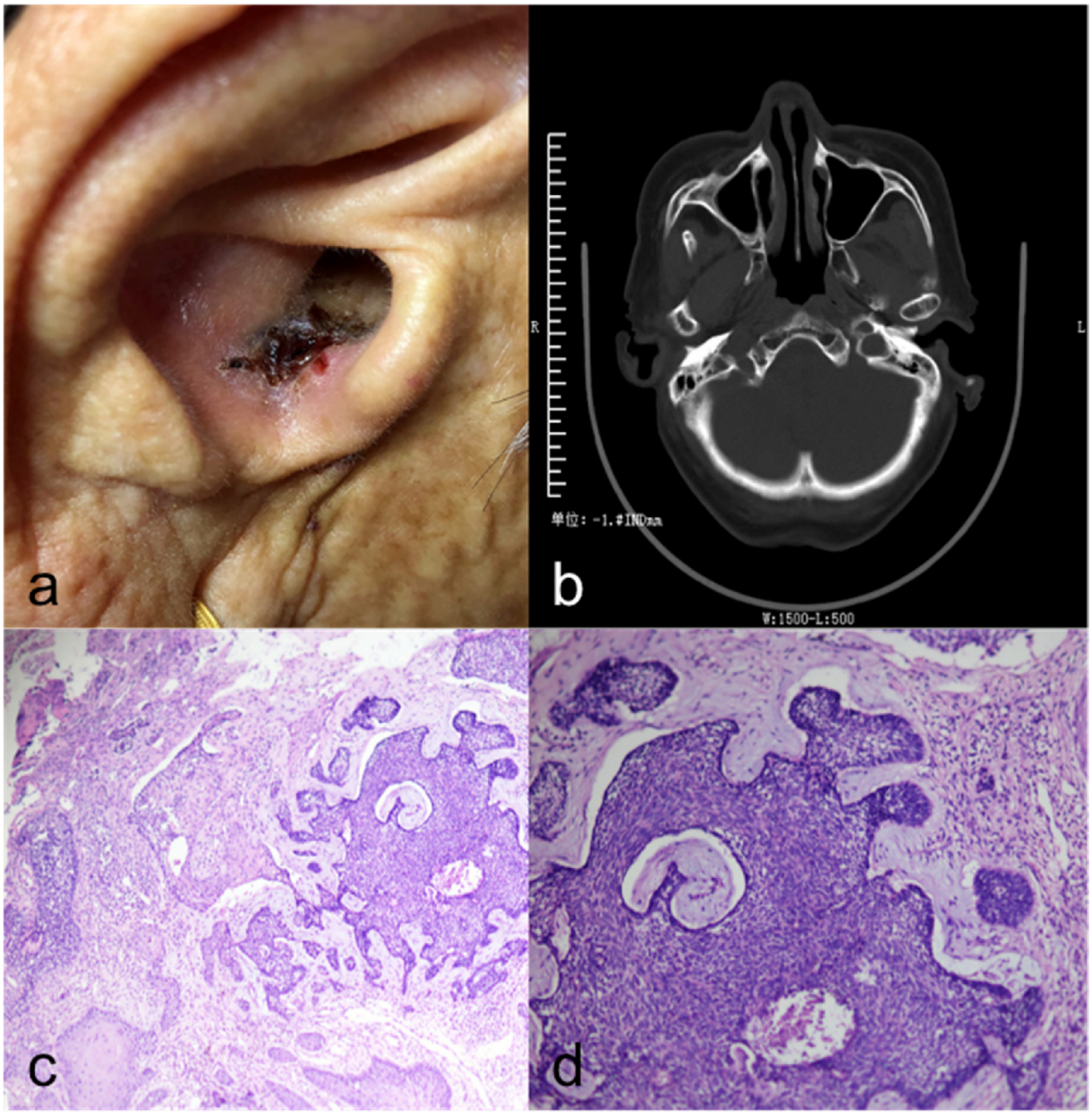

Fig. 1. a, skin lesion of external auditory canal in the patient with BCC. On the right lateral auditory canal, a brown patch of about 1.5 cm × 0.8 cm was seen, observed with erosion, exudation and black scab. b, plain CT scans of the skull in the patient with BCC. Density shadow of soft tissue in right lateral auditory canal, nodular protuberance and no erosive destruction of surrounding bone structure were observed. c, d Histopathology: Dermal cord-like irregular basal-like cell mass proliferation was observed in the dermis, and the periphery of the proliferating cell was arranged in a palisade shape. The contractile space was visible (HE, c, 100×; d, 200×).

The patient refused surgical treatment because of her old age. With the consent of the patient and her family, the patient was treated with 5-aminolevulinic acid photodynamic therapy (ALA-PDT). Methods：The pus and scab on the surface of the lesion were removed with normal saline. Then the fresh 20% 5-ALA solution was applied on the tumor and its surrounding area of 0.5 cm normal skin. The skin was encapsulated with sterile plastic film and covered with black film to avoid light. Then the package was removed after 4 h. A special semiconductor laser fiber with 635 nm wavelength red light was directly inserted into the EAC to irradiate the lesion. The spot diameter was about 2 cm, the output power was 300 MW, the total energy was 100 MJ/cm^2 and the irradiation was last for 30 min. The treatment was given once a week for five consecutive times. (Fig. 2a, b).

3. Results

After 5 times of treatment, the wound was basically healed and scattered milium appeared (Fig. 2c), which have been removed. Follow-up for 1 year, the skin lesion showed no recurrence of the tumors.

4. Discussion

BCC is a low-grade malignant skin tumor that occurs in keratinocytes and appendages in the basal layer of the epidermis. It is mostly common in the elderly and most commonly in the head, face, neck and the back of the hand, etc. However, it is very rare in the EAC, with an annual incidence of about 1 in 1 million [1]. BCC of the EAC grows slowly and is locally invasive, metastatic only after bone invasion [2], which can be terminal if intracranial invasion occurs [3]. There are

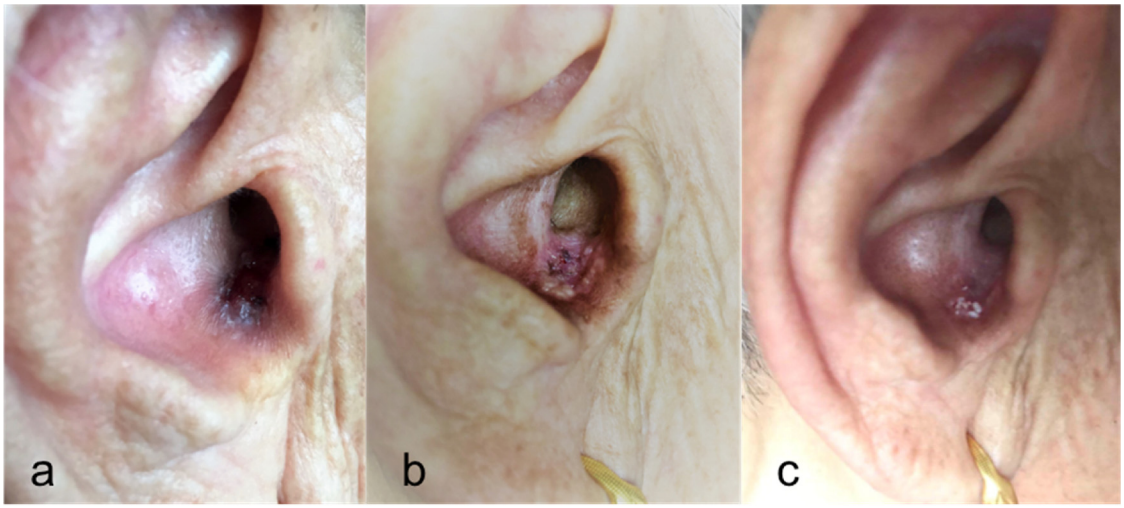

Fig. 2. a, the effect of the first ALA-PDT treatment for one week. b, the effect of the third ALA-PDT treatment for one week. c, the wound was healed after 5 times of ALA-PDT treatment, with scattered milium.

several options for BCC treatment, including surgical resection, PDT, cryotherapy, radiotherapy, chemotherapy, immunomodulatory therapy, imiquimod and topical fluorouracil. It has been demonstrated that superficial BCC and certain thin nodular BCC treated by PDT with high efficacy and superior cosmetic outcome over conventional therapies [4]. Currently reported BCCs of EAC were mainly treated with surgical resection [5]. Temporal bone resection may be required for canal involvement; auricle resection and reconstruction may be required for extensive lesions. PDT can be used as an alternative for patients with large lesions, special sites, and intolerance to surgery or advanced tumors. The lesion of the patient described above was located in the EAC. Considering that the CT scan showed that the tumor did not invade the bone canal and the patient refused surgery, ALA-PDT therapy was used. The patient was cured after 5 times of treatment, and no recurrence occurred during the follow-up period of 1 year.

5. Conclusion

To our knowledge, there have been no reports of PDT for BCC of the EAC. Our case shows that PDT for BCC of the EAC can achieve good results, and the patient has less pain and has a cosmetic effect compared with surgical resection. It adds a new treatment option for BCC of EAC patients, especially for those who cannot suffer or refuse to use surgery.

Author role

Each author can access to the data. All authors contributed to the manuscript.

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Declaration of Competing Interest

The authors have nothing to disclose.

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