



## Case report

## A case report of cutaneous angiosarcoma treated by photodynamic therapy with chemotherapy and surgery

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## 1. Introduction

Angiosarcoma is a rare malignant neoplasm that arises from vascular or lymphatic endothelial cells. Characterized by frequent recurrence, metastases and invasive growth, angiosarcoma accounts for 1% to 4% of all soft tissue sarcomas [1,2]. As it often presents with diffuse and extensive lesions, dermatologic surgeons often find it difficult to obtain a clear surgical margin for angiosarcoma, resulting in poor surgical efficacy.

Photodynamic therapy (PDT) is increasingly used in the management of skin cancers. In addition, PDT [3] can be applied multiple times with no obvious drug resistance and good cosmetic results. PDT was used to treat a patient with recurrent multifocal angiosarcoma by Thong et al. [4]. Hence, we decided to try PDT in this case, combined with standard surgery, radiotherapy and chemotherapy to treat cutaneous angiosarcoma.

## 2. Case report

A 49-year-old woman was admitted to our hospital with a complaint of “Discovering head masses for over 4 months and diagnosis of angiosarcoma for 10 days” in June 26, 2017. Physical examination showed there were six tender red masses scattered located on head with unclear border and ulcerated surfaces. And the largest one was approximately 3 x 2 cm. Combined with histopathological hematoxylin-eosin evaluation (Fig. 1) and immunohistochemistry (CD31(+), Vimentin(+), CK-P(-), HMB45(-), EMA(-), Melan-A(-), S-100(-)), the diagnosis of cutaneous angiosarcoma was made.

Taking into account the side effects of radiotherapy, the patient refused to receive it. After 5 cycles of standard chemotherapy with paclitaxel, no metastasis were found, but the skin lesions were not significantly improved. After obtaining informed consent, we treated the patient with PDT. The masses were topically treated with 20% 5-aminolaevulinic acid (5-ALA) cream (Shanghai Fudan-Zhangjiang Bio-Pharmaceutical Co. Ltd, Shanghai, China). After 4 h of light free incubation, the lesions then were irradiated with 100 J/cm<sup>2</sup> 633 nm red

light at 80 mW/cm<sup>2</sup> for 20 min. The ALA-PDT procedure was repeated 5 times at 1-week intervals. After five cycles of ALA-PDT, the size of two lesions was reduced by four-fifths compared with their size prior to instituting PDT (Fig. 2). In addition, the boundary was clear, the color was lighter than before, the lesion was less firm than before, and no exudation and ulceration was observed after PDT.

## 3. Results

The patient underwent surgical treatment after PDT treatment. She had a surgical margin of 2 cm beyond the clinically visible margin. Postoperative pathology showed scalp angiosarcoma and the surgical margin was clear, after 6 months follow up there was no evidence of local recurrence, and the patient was in good general condition.

## 4. Discussion

Angiosarcoma has a poor prognosis [5] and is rarely curable. Studies have shown [6] that combination therapy can improve the overall survival rate of angiosarcoma. However, in this case, surgery after chemotherapy is particularly difficult owing to extensive lesions. Five sessions of PDT before surgery significantly reduced the extent of surgical resection facilitating obtaining negative margins, improving the effectiveness of surgery and accelerating wound healing.

## 5. Conclusions

To sum up, combined with standard surgery and chemotherapy, presurgical PDT is may have value for special sites or multifocal cutaneous angiosarcoma which are often recalcitrant to therapy.

## Conflict of interest statement

This manuscript has been read and approved in final form by all authors and the authors declare no conflicts of interest.

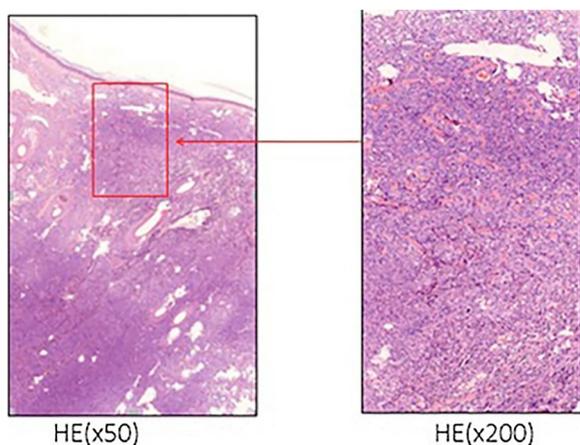
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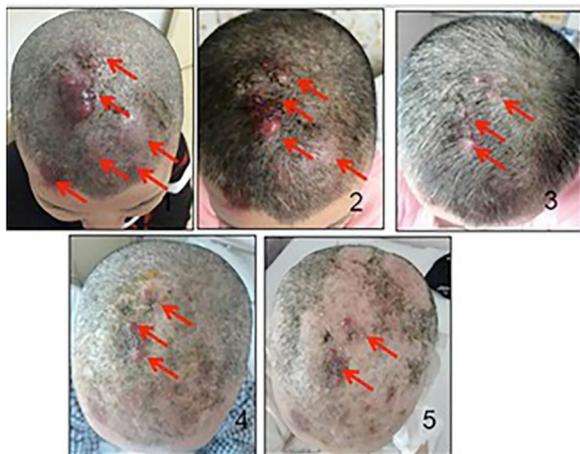
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**Fig. 1.** Initial histopathology image: the vascular lacunae surrounded by diffuse tumor cells were seen in the dermis, and the vascular lacunae were coincident with each other. The linings of the vascular were hyperplastic endothelial cells. Some of the endothelial cells were darkly stained and had mitoses images.



**Fig. 2.** Clinical pictures after each photodynamic therapy, a total of five times.

#### Author role

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

manuscript.

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