

Case report

Feasibility of 5-aminolevulinic acid mediated photodynamic therapy for male genital lichen sclerosis

Jianchun Hao^{a,b}, Jie Liu^{a,*}^a Department of Dermatology, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100730, China^b Department of Dermatology, Beijing ChuiYangLiu Hospital, Beijing, 100022, China

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ABSTRACT

In this report, 5-aminolevulinic acid mediated topical photodynamic therapy (ALA-PDT) was firstly used to treat 3 male patients (26–39 years old) who suffered from male genital lichen sclerosis (MGLSc), all of who had a history of circumcision. Repeated ALA-PDT treatments were performed on these patients and achieved various degrees of improvement in signs and symptoms, especially in the sclerosis and subjective symptoms. Three patients showed 30%–70% of reduction of lesion size after treatments. The side effects of ALA-PDT were irradiation site pain and swelling, which disappeared quickly after irradiation without the need of medication. There was no recurrence or aggravation with at least 6 months of follow-up. This case report demonstrates that ALA-PDT is effective and well tolerated for MGLSc patients who have a history of circumcision. The true value of ALA-PDT for MGLSc deserves further study.

Male genital lichen sclerosis (MGLSc) is a chronic inflammatory disease that causes itching, soreness, dyspareunia, and dysuria, and even induces penile squamous cell carcinoma (SCC) [1]. Currently, topical steroids and circumcision are the conventional treatments of MGLSc, however, the remission rates are unsatisfactory [1,2]. Moreover, the side effects related to the prolonged topical steroid treatment and circumcision are not well accepted by patients. Recently, 5-aminolevulinic acid mediated topical photodynamic therapy (ALA-PDT) has been reported to treat vulval lichen sclerosis (VLS) effectively [3,4]. However, MGLSc patients were unreported to be treated with ALA-PDT. In this case report, ALA-PDT was firstly used to treat 3 MGLSc patients (26–39 years old) who had the history of circumcision, and various degrees of improvement in signs and symptoms were achieved.

The ALA-PDT procedure was as follows: 5-aminolevulinic acid hydrochloride powder (Shanghai Fudan-Zhangjiang Bio-Pharmaceutical Co. Ltd, Shanghai, China) was dissolved in injection water to make 20 % ALA solution, which was then applied to lesions with a 1-cm margin and covered by wet dressing and cling film for 3 h. After occlusion, light irradiation was carried out using a laser of 633 nm (Wuhan Yage Photoelectric Technology Co. Ltd, Wuhan, China) at the fluence rate of 60 mW/cm² for 30 min. All patients had signed the informed consent form.

1. Case 1

A 39-year-old man presented with white indurated lesions on the genital for 1 year. He complained of itching and painful erection which limited sexual activities. The scores of itching and pain were 7 and 2 respectively, according to the visual analog scale (VAS) of 0–10. No dysuria was reported. He received a circumcision at the age of 31 performed at other hospital. The dermatological examination showed erythemas and indurated hypopigmented macules on the glans penis, foreskin, and coronary sulcus, and fissures and erosions on the coronary sulcus (Fig. 1a). The histopathological examination showed hyperkeratosis, epidermal atrophy, basal cell degeneration, dermal hyalinization and notable lymphocytic infiltrate at the bottom of the hyalinization (Fig. 1b). He was diagnosed with MGLSc clinically and histopathologically. He received twelve ALA-PDT treatments at 4-week intervals. After the last treatment, the lesion size had decreased by 70 %, leaving small-size hypopigmented macules with peripheral erythemas mainly on the glans penis without the sign of sclerosis or erosion (Fig. 2). The VAS score of itching decreased to 1. Previous painful erection disappeared and sexual dysfunction was improved greatly. During the treatment, the patient had obvious irradiation site pain which could be relieved after stopping irradiation. Post irradiation swelling disappeared after 3 days. At the 6-month follow-up, there was no recurrence or aggravation.

* Corresponding author.

E-mail address: Liujie04672@pumch.cn (J. Liu).<https://doi.org/10.1016/j.pdpdt.2020.101666>

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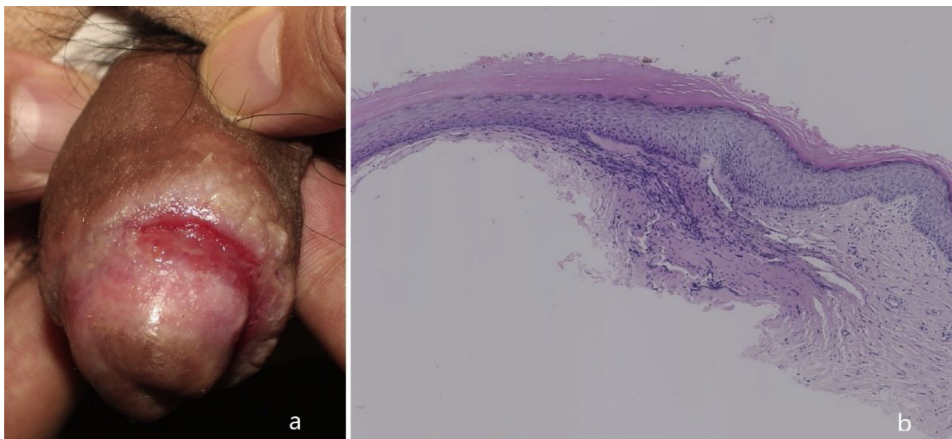


Fig. 1. Before the treatment with ALA-PDT, patient 1 showed erythemas and indurated hypopigmented macules on the glans penis, foreskin, and coronary sulcus, and fissures and erosions on the coronary sulcus (a). The histopathological examination showed hyperkeratosis, epidermal atrophy, basal cell degeneration, dermal hyalinization and notable lymphocytic infiltrate at the bottom of the hyalinization ($\times 10$, b).



Fig. 2. After the last treatment with ALA-PDT, the improvements in patient 1 indicated that the lesions subsided to small-size hypopigmented macules with peripheral erythemas mainly on the glans penis without the sign of sclerosis or erosion.

2. Case 2

A 36-year-old man diagnosed with MGLSc 10 years ago, received a circumcision and achieved complete remission. Three months ago, his foreskin began to show indurated hypopigmented macule and stripes accompanied by itching. The VAS score of itching was 5. Dyspareunia and dysuria was unreported. The histopathological examination confirmed the diagnosis of MGLSc. ALA-PDT was applied every 4 weeks. After the fourth treatment, the lesion size had decreased by 50 %. Both sclerosis and itching were disappeared. The patient was satisfied with the treatment and refused to continue ALA-PDT treatment. During the treatment, the patient had subtle irradiation site pain, and post treatment swelling disappeared after 2 days. At the 10-month follow-up, there was no recurrence or aggravation.

3. Case 3

A 21-year-old man presented with a white macule with severe sclerosis on the glans penis for 3 months and accompanied by itching and painful erection. The VAS scores of itching and pain were 5 and 8, respectively. Dyspareunia and dysuria was unreported. He had a circumcision 6 months ago. The clinical and histopathological examination confirmed the diagnosis of MGLSc. We treated the patient with ALA-PDT every 2 weeks. After the fourth treatment, the lesion size had decreased by 30 %, sclerosis became mild, and both VAS scores of itching and painful erection declined to 1. The patient was satisfied and wanted to stop the treatment. During the treatment, the patient had subtle irradiation site pain. Swelling disappeared after 1 day. At the 11-month follow-up, there was no recurrence or aggravation.

The aims of treatment of MGLSc are to alleviate the symptoms, minimize sexual and urinary dysfunction, reduce the risk of progression to SCC, and preserve the foreskin if at all possible [1,2]. We chose ALA-PDT to treat these patients for three reasons: first, our patients were not suitable for circumcision because all of them had a history of circumcision; second, the previous studies indicated that partial or even full remission of symptoms and signs has been achieved by ALA-PDT in female VLS, even prior to the treatment of topical steroids [3,4]; third, ALA-PDT can preserve the foreskin well. In this report, significant improvements were shown in clinical manifestations, especially in the sclerosis and subjective symptoms. Three patients showed 30%–70% of reduction of lesion size after treatments. The side effects of ALA-PDT were irradiation site pain and swelling, which disappeared quickly after irradiation without the need of medication. The procedures were tolerated well. There was no recurrence or aggravation within at least 6 months of follow-up.

It should be noted that one of the patients received twelve ALA-PDT treatments, which is more than 3 times in other reports for VLS [3,4]. The reasons for this are as follows: the sign and symptom of the patient were severe; though progressive improvement was achieved with the increase of treatment times, the desirable result was not gained until after the 12th treatment; what is more, no side effects appeared during the course of treatment.

In conclusion, this case report demonstrates that ALA-PDT is effective and well tolerated for MGLSc patients who have a history of circumcision. ALA-PDT might be feasible for MGLSc and offer the benefit of preserving the anatomical integrity of foreskin and avoiding the circumcision. Furthermore, the use of ALA-PDT can also avoid the side effect of prolonged topical steroid treatment. The true value of ALA-PDT for MGLSc deserves further study.

Declaration of Competing Interest

No conflict of interest.

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