

Angiokeratoma of Fordyce Treated with 0.5% Ethanolamine Oleate or 0.25% Sodium Tetradecyl Sulfate

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Angiokeratoma of Fordyce is usually treated because of cosmetic concerns or bleeding that causes anxiety to the patient,^{1,2} but it can be challenging to treat when lesions occur in large numbers. Treatments include surgery or locally destructive treatment modalities such as electrocoagulation, cryotherapy, and various laser systems.^{1,2} In the current report, we describe three male patients with multiple angiokeratomas of Fordyce whose lesions were successfully treated with repeated local injections of 5% ethanolamine oleate or 0.25% sodium tetradecyl sulfate (STS), which caused the lesions to become flattened and markedly smaller. Mild temporary pain and epithelial sloughing accompanied treatment, but no permanent side effects were observed.

To the best of our knowledge, the use of sclerotherapy for the treatment of angiokeratoma of Fordyce has not been previously reported. Our results indicate that sclerotherapy with 5% ethanolamine oleate or 0.25% STS is a safe and effective method for the treatment of this condition.

Case Reports

A 55-year-old man presented with dark-red papules on the scrotum, 4 to 5 mm in diameter, with a scaly surface that had developed gradually over 7 years (Figure 1A). His past medical history was unremarkable, and his systemic examination was normal. Laboratory data, including complete blood count,

kidney and liver function tests, and urinalysis, were within the normal ranges.

Thirty minutes after receiving topical anesthesia with lidocaine 2.5% and prilocaine 2.5% cream, the patient lay down to allow convenient access to the scrotum. Sclerotherapy was then administered using 5% ethanolamine oleate (BC World Pharm Co., Ltd., Gyeonggi-do, South Korea) to the right side of the scrotum and 0.25% STS (Tromboject 3%, Omega Laboratories Ltd., Montreal, Canada) to the left side. For the injection, STS was diluted with distilled water to a final concentration of 0.25%. A 0.5-mL insulin syringe with a 30-gauge needle was used, and the needle was bent to an angle of 15° to facilitate injection. The needle was inserted at a shallow angle through the skin. Both sclerosants were injected slowly into the lesion until blanching was observed. Typically, one injects 0.005 to 0.01 mL of sclerosant and then massages the region with the thumb and index finger. In this case, the total volume of solution injected was less than 0.1 mL for each side. After the procedure, pressure was applied immediately using a cotton ball and tape. The patient reported mild pain on the side of scrotum treated with 5% ethanolamine oleate.

After treatment, encrusted lesions, which were found on both sides of the scrotum but more commonly on the right side, healed spontaneously without any residual ulceration or scarring. Three weeks later, at a follow-up to evaluate the response to injection, the

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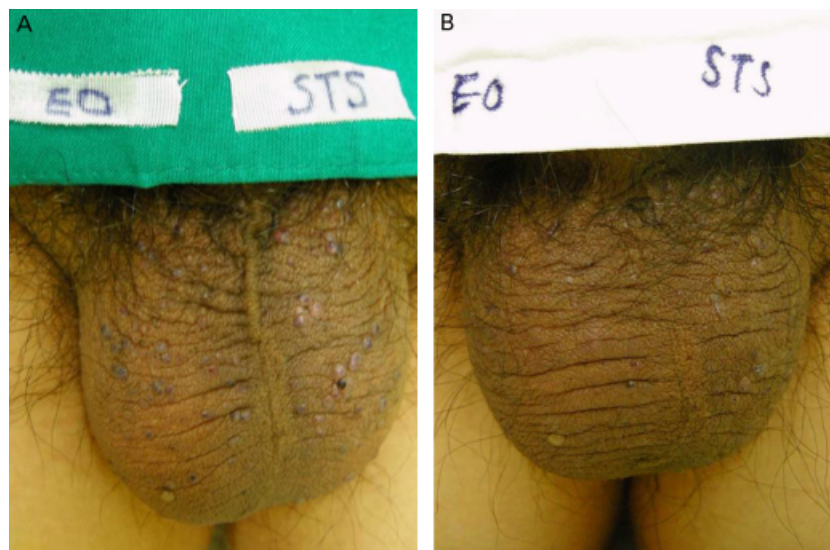


Figure 1. (A) Multiple large lesions of angiokeratomas of Fordyce situated in a diffuse pattern on the scrotum before treatment. (B) Significant improvement after two sessions of sclerotherapy. More lesions disappeared on the right side treated with 5% ethanolamine oleate.

angiokeratomas had shrunk significantly on both sides, with some residual lesions; 5% ethanolamine oleate eradicated more lesions than 0.25% STS, although sclerotherapy with 0.25% STS also yielded good results after one additional treatment performed after a 3-week interval (Figure 1B). No recurrence was observed over a follow-up period of 2 months.

A 45-year-old man visited our hospital for the treatment of angiokeratoma of Fordyce that had been present for 1 year (Figure 2A). Past medical history, systemic examination, and laboratory data were unremarkable. Sclerotherapy was performed using 5% ethanolamine oleate on the right side of the scrotum and 0.25% STS on the left side, in the same manner as case 1. After treatment, the patient complained of mild pain lasting for 1 day on the right side of the scrotum. Encrusted lesions, which were found on both sides of the scrotum, healed spontaneously without any residual ulceration or scarring. After 2 weeks, the angiokeratomas showed significant shrinkage, with three residual lesions observed on the left side. One additional treatment of the left side with 0.25% STS, performed after a 3-week interval, led to successful results (Figure 2B).

No recurrence was observed over a follow-up period of 2 months.

A 62-year-old man presented with angiokeratoma of Fordyce that had been present for several years (Figure 3A). At the time of treatment, the patient had had a cardiac stent for 3 years because of angina pectoris. His systemic examination and laboratory data were unremarkable. Sclerotherapy was performed using 5% ethanolamine oleate on the left side of the scrotum and 0.25% STS on the right side, in the same manner as that used for the other cases. The patient complained of moderate pain for 1 day and epithelial sloughing lasting 2 weeks on the right side. Epithelial sloughing healed without scarring. The patient returned for a follow-up visit 1 month after the first treatment with no residual lesions (Figure 3B). No recurrence was observed over a follow-up period of 2 months.

Discussion

The treatment of angiokeratoma of Fordyce can be challenging. Although surgical excision or locally destructive methods such as electrocoagulation or



Figure 2. (A) A few red papules scattered on the scrotum before treatment. (B) Significant improvement after two sessions of sclerotherapy.

cryotherapy may be used, these modalities have certain drawbacks.² For example, excision is not practical if there are many lesions, and electrocoagulation and cryotherapy may not be suitable for diffuse patterns. Moreover, these modalities can cause hypopigmentation, hyperpigmentation, and atrophic scarring.

Several vascular lasers have been used successfully to treat angiokeratoma of Fordyce. Specifically, a 578-nm copper laser, a 578-nm argon laser, and a 532-nm potassium-titanyl-phosphate laser have shown successful resolution of angiokeratoma papules with minimal side effects.³⁻⁵ In spite of their limitation of penetration depth, pulsed-dye lasers have



Figure 3. (A) Multiple black-red angiokeratomas of Fordyce observed on scrotum before treatment. (B) Significant improvement after one session of sclerotherapy.

also shown good treatment results with minimal side effects.⁶ In addition, ablative lasers such as carbon dioxide and erbium-doped yttrium aluminium garnet lasers have been used to remove the hyperkeratotic epidermis before treatment with a vascular laser.^{5,7}

Although sclerotherapy has been used successfully to treat various vascular lesions, its use as a suitable treatment for angiokeratoma of Fordyce has not been reported. Although it may require several treatment sessions, sclerotherapy is a simple, convenient, and economical method that does not require expensive laser equipment.

A number of sclerotherapeutic agents are available for the treatment of vascular lesions. We chose ethanolamine oleate and STS because of their availability in South Korea. Ethanolamine oleate produces irritation, an inflammatory response, and endothelial fibrosis.⁸ Although ethanolamine can cause hemolysis and renal failure with systemic exposure, when used in sclerotherapy, it has a favorable side-effect profile if extravasation into local tissues occurs.⁸

STS, a widely used, safe solution for destroying unwanted veins, is a detergent that destroys the endothelial lining of the target vessel.⁹ The basal collagen layer is exposed, vasospasm is induced, and vessel fibrosis ultimately occurs. The clinical incidence of postsclerotherapy deep vein thrombosis or pulmonary embolism is very low. STS has been reported to have no or a minor effect on the coagulation system.¹⁰

In the current report, results showed significant improvement of angiokeratoma of Fordyce after one to two sessions of sclerotherapy, with mild pain and epithelial sloughing that caused no scar formation. All patients responded better to 5% ethanolamine oleate than 0.25% STS, but 5% ethanolamine oleate was associated with more pain and sloughing.

In conclusion, sclerotherapy with ethanolamine oleate or STS is a useful and safe treatment modality for the treatment of angiokeratoma of Fordyce. Further evaluation in a larger study population over a longer period is needed to determine the long-term safety and efficacy of sclerotherapy in patients with angiokeratoma of Fordyce.

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