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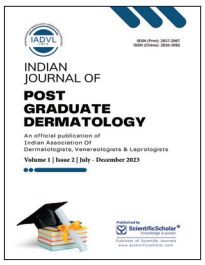

Original Article

Sclerotherapy in Pyogenic Granuloma: An Open Uncontrolled Trial

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ABSTRACT

Objectives: Pyogenic granuloma (PG) is a common, benign lesion of vascular origin. It may rapidly grow in response to an unknown stimulus that triggers endothelial proliferation. The treatment of PG using sclerosing agents is a novel approach to overcome drawbacks associated with other procedures. The crucial purpose of this study is to evaluate the efficacy and safety of detergent sclerosant, sodium tetradecyl sulphate (STS) in the management of PG.

Materials and Methods: A total of 18 patients with PG, attending dermatology venereology and leprosy (DVL) outpatient department (OPD) were treated with sclerotherapy after obtaining written and informed consent. STS solution (3%, 30 mg/mL) was injected with insulin syringe slowly into the lesion until the lesion blanched up to maximum amount of 0.3 mL. Injection was repeated every week until resolution or up to a maximum of 4 doses. Follow-up evaluation was performed monthly, up to 3 months.

Results: In our study, complete resolution was seen in all the patients. No complication occurred after injection. All the patients were followed up for 3 months and none of the lesions recurred over this duration.

Conclusion: Sclerotherapy is effective and safe in the treatment of PG without any recurrence. This approach may become a first-line therapy option for PG, especially in cases of recurrent PG associated with bleeding, and in lesions over surgically inaccessible areas.

Keywords: Pyogenic granuloma, Sclerotherapy, Sodium tetradecyl sulphate

INTRODUCTION

Pyogenic granuloma (PG) or lobular capillary hemangioma is a benign vascular tumor of the skin and mucous membrane. Clinically, the lesions appear as solitary red or purple nodules, characterised by rapid growth and friable surface with a tendency to bleed.[1] Treatment modalities for PG range from surgical excision to intralesional injections of sclerosing agents. Sclerotherapy is defined as the targeted elimination of small vessels and vascular anomalies by the injection of a sclerosant. They can be broadly classified into detergents, osmotic agents, and chemical irritants. Since the lesions are reactive hyperplasias, standard therapies such as conventional surgical resection or laser surgical removal have limited therapeutic efficacy and are linked with significant recurrence rates. As a result, sclerotherapy has emerged as a feasible alternative treatment option. We attempted a sclerotherapy procedure on PG because of its vascularity and the potential response to similar other lesions.[2]

This study includes 18 patients of PG treated with sodium tetradecyl sulphate (STS) solution (Setrol) (3%, 30 mg/mL). Only limited studies are available in the literature, documenting the use of sclerotherapy for this indication, narrowing the knowledge gap.

MATERIAL AND METHODS

The present study was a prospective interventional study carried out from January 2021 to March 2022 in the outpatient department of dermatology in a tertiary care centre after approval from the institutional ethics committee. The study enrolled 18 patients who were clinically diagnosed with PG after obtaining written informed consent. Demographic and clinical information, including the size and site of PG, was recorded. Photographic records were made before treatment (at baseline) and at each subsequent visit. No other treatment for PG was allowed for concurrent use. Pregnant and lactating women, patients with cardiac disorders, patients with any allergy to sclerosant, and who have received treatment for PG during the last 6 months were excluded from the study.

Treatment protocol and outcome evaluation

Depending on the size of the lesion, the patients received 0.1–0.3 mL of intralesional STS in the concentration of 3%, 30 mg/mL until the lesion blanches. For pedunculated lesions, the base of the lesion was clamped and the lesion was compressed with cotton gauze for about a minute to prevent sclerosant from inadvertently leaking into the surrounding tissue. The procedure was repeated every week until complete resolution or up to a total of four sessions. At each visit, the lesions were photographed and compared with the previous photographs. The lesion was monitored at least once a week after each session until it turned into a dry necrotic mass and fell off on its own. The evaluation was repeated monthly for up to 3 months.

Dermoscopy was performed in all cases before intervention and after the lesions had completely resolved. The lesions were visualised with a Dermlite DL4 dermoscope, and the photographs were taken using an iPhone 13.

Documentation of adverse effects was done, and patients were monitored on a monthly basis for 3 months following the final injection for detection of any recurrence.

RESULTS

The study was successfully completed by all 18 patients. Males outnumbered females in a ratio of 1.25:1. The ages of the individuals spanned between 20 and 45 years old, with a mean age 32.8 ± 7.16 years [Table 1].

These 15 PGs ranged in size from 0.5 to 1.5 cm (mean size: 0.9 ± 0.26 cm). The majority of the cases had lesions over the scalp (ten cases) [Figures 1-3], followed by three cases each involving lesions on the face and hand [Figure 4] and two cases with lesions over the lips. By the end of the study period (4 weeks, 4 doses of injection), all 18 (100%) patients had complete resolution of lesions. Four patients with lesion diameter <7 mm had complete resolution with a single injection of intralesional sclerotherapy by the end of 1 week. By the end of the 2nd week, nine more patients had complete clearance of lesions. Two patients with lesion diameter of 11 mm and 12 mm required 3 doses of intralesional

Table 1: Summary of patients with pyogenic granuloma treated with intralesional sclerotherapy (n=18).

Sex	Age	Site	Diameter (mm)	Dose	No. of sessions	Complications	Response
Male	37	Scalp	10	0.3	2	None	Complete resolution seen
Female	28	Scalp	9	0.2	2	None	Complete resolution seen
Male	25	Hand	8	0.2	2	None	Complete resolution seen
Female	32	Scalp	12	0.3	3	None	Complete resolution seen
Male	20	Face	8	0.2	2	None	Complete resolution seen
Male	35	Hand	7	0.1	1	None	Complete resolution seen
Female	22	Scalp	13	0.3	4	None	Complete resolution seen
Female	37	Scalp	9	0.2	2	None	Complete resolution seen
Male	34	Face	7	0.1	2	None	Complete resolution seen
Male	27	Scalp	8	0.2	2	None	Complete resolution seen
Female	41	Face	6	0.1	1	None	Complete resolution seen
Male	45	Scalp	15	0.3	4	None	Complete resolution seen
Female	35	Lip	6	0.1	1	None	Complete resolution seen
Male	38	Scalp	12	0.3	4	None	Complete resolution seen
Female	26	Hand	8	0.2	2	None	Complete resolution seen
Male	34	Scalp	8	0.2	2	None	Complete resolution seen
Male	42	Scalp	11	0.3	3	None	Complete resolution seen
Female	25	Lip	5	0.1	1	None	Complete resolution seen

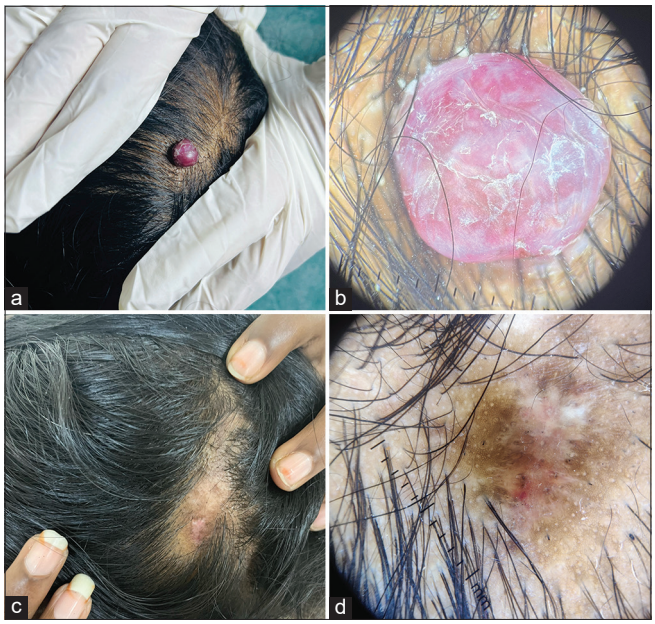

Figure 1: (a) Pyogenic granuloma over scalp, (b) dermoscopy showing red and white homogeneous areas surrounded by collarette of scales, (c) pyogenic granuloma resolved after two sessions of sclerotherapy, (d) dermoscopy of resolved lesion.

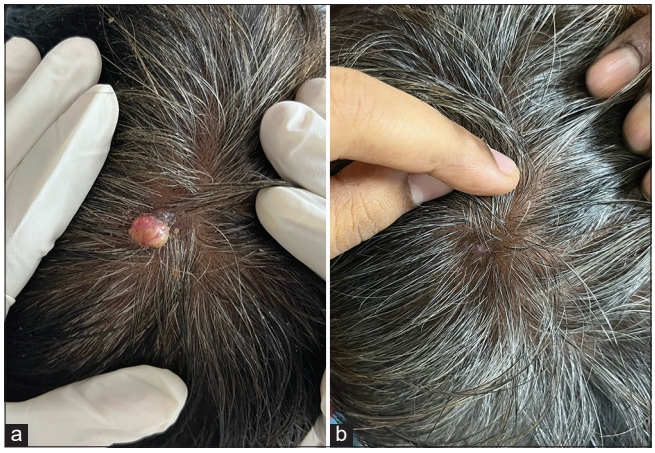

Figure 2: (a) Pyogenic granuloma over scalp (b) pyogenic granuloma resolved after two sessions of sclerotherapy.

sclerotherapy given 1 week apart for complete clearance of lesions. By the end of the 4th week, two more patients had complete clearance of lesions. Following injection, several individuals developed necrotic tissue formation, which eventually desquamated and left a normal skin surface.

One to four weekly intralesional injections were required to obtain complete remission [Table 1]. Despite statistical analysis, no link was found between characteristics such as age, gender, lesion size or location, and the number of therapy sessions/time to resolution.

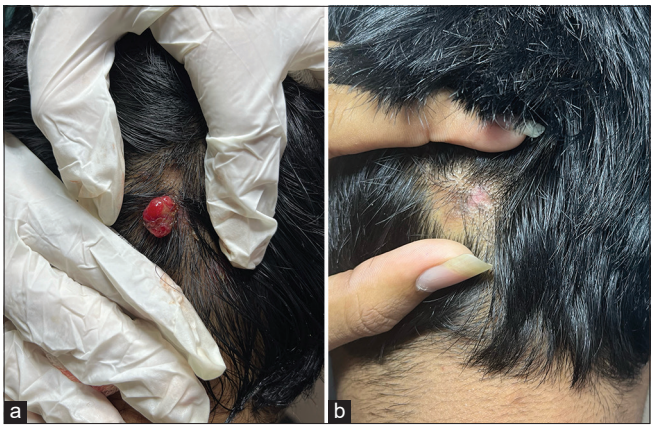

Figure 3: (a) Pyogenic granuloma over scalp (b) pyogenic granuloma resolved after two sessions of sclerotherapy.

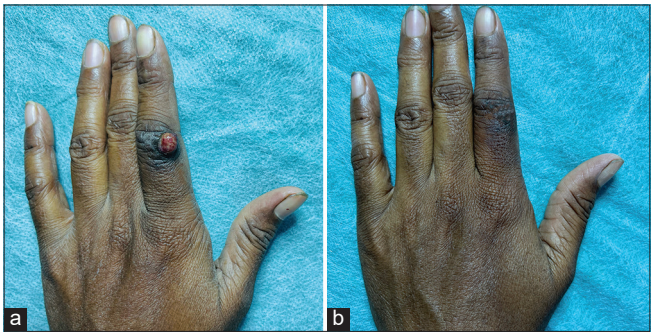

Figure 4: (a) Pyogenic granuloma over dorsum of index finger (b) pyogenic granuloma resolved after three sessions of sclerotherapy.

Dermoscopy performed using Dermlite DL4 showed red to white homogeneous areas surrounded by a collarette of scales in about 90% of the study patients [Figure 1b].

In our study (n = 18), all patients (100%) complained of pain during injection. Necrotic tissue formation following injection was noted in 18 patients (100%), mild local pruritus was seen in 10 patients (55.55%), and edema in 2 patients (11.11%). No significant complications were noted during the study period. All patients completed the 3-month follow-up period. None of the lesions recurred over this duration.

DISCUSSION

PG is a benign vascular tumor of the skin and mucous membrane characterised by rapid growth and a friable surface. It can occur at any age, but is more often seen in children and young adults. Although spontaneous regression may be seen in some cases, treatment is usually required due to frequent bleeding and ulceration.

Many surgical and non-surgical treatment modalities have been described in the management of PG. These include

surgical treatments such as full-thickness excision, shave excision, cryotherapy, laser therapy, curettage, and non-surgical modalities that is, topical therapy and intralesional therapy. Conventional surgical modalities are associated with scar formation along with a high recurrence rate. As a result, sclerotherapy has emerged as a novel therapeutic modality in the treatment of PG.

Sclerotherapy is defined as the targeted elimination of small vessels and vascular anomalies by the injection of a sclerosant. They can be classified as detergents (STS, sodium morrhuate, polidocanol, and ethanolamine oleate), osmotic agents (hypertonic sodium chloride and hypertonic sodium chloride with dextrose), and chemical irritants (chromated glycerin and poly iodinated iodine).[1] In our study, STS was considered as it is an FDA-approved detergent sclerosant for superficial varicosities as well as due to its easy availability and cost-effectiveness. Furthermore, even if it extravasates, it has a very low incidence of allergic responses, pigmentation, and other undesirable cutaneous consequences.

STS is a long-chain fatty acid that acts by causing irreversible endothelial injury, leading to inflammation and vascular thrombosis that eventually leads to the formation of fibrous tissue.[3] Thus, when sclerosing agents are injected into the blood vessels, it causes significant tissue irritation resulting in endo fibrosis and vascular obliteration.[4] This mechanism of action allows intralesional STS to be utilised in the treatment of PG, caused due to localised proliferation of capillaries, thereby eliminating the chance of recurrence.

Adverse effects of treatment with STS include cutaneous necrosis, hyperpigmentation, post-procedure pain, and edema. Post-procedure edema and scarring could occur secondary to an inflammatory reaction. This can be reduced by using cold packs during and immediately after the surgery. Hyperpigmentation has been reported in up to 30% of cases of spider telangiectasias treated with this agent[5] but was not noted in any of our subjects. Other potential local complications, such as Nicolau syndrome, can occur as a result of unintended extravasation of a sclerosant into the surrounding tissue; this can be avoided by clamping the stalk of the pedunculated lesion,[6] which was followed in our patients.

In the present case series, a 100% response rate was achieved with no recurrence. In the study done by Bansal *et al*.[1] in the treatment of PG with intralesional sclerotherapy, all patients completed the study. All 15 subjects showed complete resolution of PG by the end of the 3 weeks and follow-up evaluation was performed monthly, for up to 6 months. In the study done by Moon *et al*.,[7] 14 cases treated with the same sclerosant showed results comparable to our study. Sacchidanand and Purohit and Moon *et al*. reported a complete resolution of PG in a week, using the same sclerosant in the same concentration and amount in three patients, two with PG over the lip and one over the scalp, without any recurrence during the 3-month follow-up period. In the study conducted by Shah and Ranghani, on sclerotherapy in PG and mucocele, all 15 patients showed complete regression of the lesion after 1–3 consecutive injections in a weekly interval. Recurrence was seen in a single case of mucocele.[8]

Dermoscopically, PG is characterised by homogeneous reddish or white-red areas encircled by a whitish collarette of scale. These areas correspond to the histologic finding of proliferating capillaries and veins, while the collarette relates to the epidermal collarette that frequently surrounds the proliferation of blood vessels in the PG. White lines correspond to the histologic evidence of fibrous septa that surround the lobules.[9,10]

Limitations of the study

The major drawback of our study was the lack of a control group, besides the small sample size (n = 18) and a short follow-up period of up to 3 months, thus the rate of recurrence could not be thoroughly explored. Hence, well-designed, large randomised placebo-controlled studies with a longer follow-up time are needed to further investigate the effectiveness of intralesional STS for the therapeutic cure of PG.

CONCLUSION

We conclude that sclerotherapy is a simple, safer, effective, and inexpensive office-based technique that has a higher success rate and lowers the chances of recurrences than conventional methods. The advantages of this procedure include no necessity for local anaesthesia, minimal discomfort while injecting to the patient, negligible blood loss, and no special post-operative care. The patient can immediately resume his normal activities. This innovative technique has the potential to become a first-line therapeutic option, particularly in cases of recurrent PG associated with bleeding, and also in lesions over surgically inaccessible areas. Although our study is limited by its small sample size and lack of randomization, the results are encouraging. To confirm the efficacy of intralesional STS injection for the treatment of PG in clinical practice, well-designed, large randomised placebo-controlled studies are essential in the future.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Bansal N, Belgaumkar VA, Chavan RB, Doshi BR. Successful treatment of pyogenic granuloma with sclerotherapy. Indian J Drugs Dermatol 2019;5:30-3.
2. Sacchidanand S, Purohit V. Sclerotherapy for the treatment of pyogenic granuloma. Indian J Dermatol 2013;58:77-8.
3. Khunger N, Sacchidanand S. Standard guidelines for care: Sclerotherapy in dermatology. Indian J Dermatol Venereol Leprol 2011;77:222-31.
4. Saraf S. Role of sodium tetradecyl sulfate in venous malformations. Indian J Dermatol 2006;51:258.
5. Tretbar LL. Injection sclerotherapy for spider telangiectasias: A 20-year experience with sodium tetradecyl sulfate. J Dermatol Surg Oncol 1989;15:223-5.
6. Nirmal B, Segu SS, Sacchidanand SA, Deshpande P. Nicolau syndrome following sclerotherapy for pyogenic granuloma. Indian J Dermatol Venereol Leprol 2014;80:484.
7. Moon SE, Hwang EJ, Cho KH. Treatment of pyogenic granuloma by sodium tetradecyl sulfate sclerotherapy. Arch Dermatol 2005;141:644-6.
8. Shah JS, Ranghani AF. Sclerotherapy in pyogenic granuloma and mucocele. J Indian Acad Oral Med Radiol 2018;30:230-4.
9. Jha AK, Sonthalia S, Khopkar U. Dermoscopy of pyogenic granuloma. Indian Dermatol Online J 2017;8:523-4.
10. Kissou A, Hassam BE. Dermoscopy of pyogenic granuloma. Pan Afr Med J 2017;27:110.

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