

Efficacy of sclerotherapy with sodium tetradecyl sulphate in the treatment of pyogenic granuloma

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Abstract *Objective* To determine the efficacy of sclerotherapy in treating pyogenic granuloma.

Methods The present study was conducted at outpatient Department Dermatology, Unit I, Mayo Hospital, Lahore. 35 patients were enrolled and were injected with 0.1ml of 3% sodium tetradecyl sulfate with the help of an insulin syringe, without local anesthesia, till the point of blanching. Patient was called weekly for two weeks for follow up to see clearance of the lesion and then after 3 months to see any recurrence using a caliper.

Results The mean age of the patients was 28.48±11.64 years. 42.9% patients were males and 57.1% patients were females. Complete clearance of lesion was found in 30 (85.7%) patients whereas 2 (5.7%) patients showed no reduction.

Conclusion Sclerotherapy is an effective procedure for the treatment of pyogenic granuloma patients.

Key words

Pyogenic granuloma, efficacy, sclerotherapy, sodium tetradecyl sulfate.

Introduction

Pyogenic granuloma, also known as lobular capillary hemangioma, is a vascular nodule that develops often at the site of a recent injury.¹ It is composed of a lobular proliferation of capillaries in a loose stroma and is a benign condition that may occur at any age with peak in second decade of life. Located usually on head, neck, upper trunk, hands and feet, it is also found in the mouth, especially in women who are pregnant.² It may arise as a complication of pulsed dye laser and has been treated by cryosurgery, electrodesiccation, chemical cautery and laser surgery.³ These procedures are

usually messy and accompanied with severe bleeding with recurrence rate of up to 50%.⁴

As search for new therapy continues, sclerotherapy is attempted in pyogenic granuloma because of its vascular nature. Sclerotherapy is the targeted elimination of small vessels, varicose veins and vascular anomalies by injection of a sclerosant.⁵ The sclerosing agents include sodium tetradecyl sulfate and monoethanolamine oleate.

Sacchidanand and Purohit⁵ treated 3 patients of pyogenic granuloma with sclerotherapy using sodium tetradecyl sulfate. Two were having lesions over the lip (size 1×1 cm) and one patient over the scalp (size 2×2 cm). After a week, lesions in all the patients resolved, leaving behind a yellow crater. This depression also

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healed within a week without any residual lesion and scarring.

Ghodsi *et al.*⁶ treated 9 patients of pyogenic granuloma with sclerotherapy using monoethanolamine oleate. All lesions healed without recurrence. In another study by Moon *et al.*⁷ treated 15 patients using the same sclerosing agent. One patient was not available for follow-up. Out of remaining 14, 12 showed complete resolution.

Pyogenic granuloma becomes troublesome with existing treatment modalities, which are accompanied with bleeding and are messy. Moreover, recurrence rate is also high with these procedures. Sclerotherapy is cost-effective, causes minimal discomfort to the patient, with no or negligible blood loss and has excellent cosmetic results. Also there is a need to create awareness about its use amongst the dermatologists in Pakistan. There is no published study from our country regarding this treatment modality for pyogenic granuloma. This study was undertaken to assess the efficacy of sclerotherapy with 3% sodium tetradecyl sulphate.

Methods

The present interventional study was conducted at Outpatient Department, Dermatology Unit I, Mayo Hospital, Lahore. 35 patients fulfilling the inclusion criteria were enrolled in the study. Informed consent was taken and demographic data were recorded on proforma. Patients of either sex 12-70 years of age, having pyogenic granuloma of less than 20 mm in size, with duration of disease of more than one month and having history of recurrent bleeding from the lesion on minor trauma were included in the study while exclusion criteria included previous anaphylaxis to sodium tetradecyl sulfate, history of asthma or migraine, pregnancy and lactation

and any type of treatment taken over the last one month. Size of the lesion was measured with a caliper and recorded and pictures were taken.

After taking aseptic measures, 0.1 ml of 3% sodium tetradecyl sulfate was injected into the lesion with the help of an insulin syringe till the point of blanching. The lesion was compressed with cotton gauze for one to two minutes. No local anesthesia was used during the procedure. Patient was observed for about 20 minutes after injection to look for any adverse effects like anaphylaxis. Patient was called weekly for two weeks for follow-up to see clearance of the lesion and then after 3 months to see any recurrence using caliper. Efficacy was labeled if there was complete clearance during this period.

Data were analyzed using SPSS version 17. Quantitative variables like age, percentage reduction in the size of granuloma before therapy and two weeks after therapy were presented in the form of mean and standard deviation. Qualitative variables like gender and efficacy were presented in the form of frequency and percentages. Data were stratified for age, gender, duration of disease and size of lesion. Chi-square was used post-stratification with p value less than or equal to 0.05 being considered as significant

Results

Complete clearance was found in 30 (85.7%) patients while 50% reduction was observed in 2 (5.7%) patients. There was no change seen in 2 (5.7%) patients (**Table 1**). Sclerotherapy was efficacious in 85.7% patients.

Regarding age, 22 patients out of 35 were less than 30 years of age and out of these, 19 had

Table 1 Results of sclerotherapy with sodium tetradecyl sulphate in pyogenic granuloma (n=35).

Grade of improvement	N (%)
Complete clearance	30 (85.7)
50% reduction	2 (5.7)
25% reduction	1 (2.9)
No reduction	2 (5.7)

Table 2 Comparison of efficacy of sclerotherapy in different age groups (n=35).

	Age		Total
	< 30 years	≥30 years	
Efficacy			
Yes	19 (86.4%)	11 (84.6%)	30 (85.7%)
No	3 (13.6%)	2 (15.4%)	5 (14.3%)
Total	22 (100%)	13 (100%)	35 (100%)

Chi square value=0.02, p-value = 1.000 (insignificant).

Table 3 Comparison of efficacy of sclerotherapy in both genders (n=35).

	Sex		Total
	Male	Female	
Efficacy			
Yes	13 (86.7%)	17 (85%)	30 (85.7%)
No	2 (13.3%)	3 (15%)	5 (14.3%)
Total	15 (100%)	20 (100%)	35 (100%)

Chi square value=0.019, p value = 1.000 (insignificant).

complete clearance while 3 had not. Similarly 13 out of 35 patients were above 30 years of age. Out of these, sclerotherapy was effective in 11 patients. However the results between the two groups were not statistically significant i.e. p-value=1.000 (**Table 2**).

Table 3 shows efficacy of sclerotherapy in both the genders. Out of 20 female patients, 17 had complete clearance of the lesion, while 3 had not. Similarly, out of 15 male patients, 13 patients showed efficacy, while 2 did not show efficacy. No statistically significant difference was found between the genders i.e. p-value=1.000.

Discussion

In our study, the mean age of patients was 28 years. This is in comparison to the analysis of

293 patients in Brazil,⁸ where the mean age of patients was 27 years. Although pyogenic granuloma can occur at any age group but more than 50% cases were observed between the ages of 10 to 40 years with a peak incidence in the third decade of life.⁹

In various studies, the ratio of females to males is twice or more.⁹ Gordon and colleagues in their retrospective analysis found female to male ratio of 2.38:1. This is in contrast to our study where the ratio was almost equal (1.3:1). The reason may be that in our social setup, females have less approach to tertiary care hospitals and they usually stay at home. The other reason may be that our sample size is less. Our results could have been changed if the sample size was increased.

Thirty out of thirty five patients in our study had complete clearance with no recurrence at three months follow up. This is in comparison to the study carried out by O'donovani *et al.*¹⁰ in Chicago. Sclerotherapy was beneficial in 86% of their study population who had hemangioma and venous malformations. They used the same sclerosing agent in the same concentration as in our study.

Deore *et al.*¹¹ reported a case in which they used the same agent sodium tetradecyl sulfate for sclerotherapy in pyogenic granuloma with successful resolution of the lesion. Our thirty patients had complete resolution showing sclerotherapy to be an effective technique for benign vascular lesions.

Hong *et al.*¹² evaluated the efficacy of sclerotherapy with ethanolamine oleate in reactive vascular lesions. Among their 21 patients, 16 had pyogenic granuloma who achieved 95% clearance. This again favors the use of sclerosants for benign vascular lesions that are used infrequently in dermatology.

Sacchidanand and Purohit⁵ in India used sodium tetradecyl sulfate in the same concentration as ours and treated three patients with pyogenic granuloma. All the three patients showed complete clearance. Their patients before this treatment had undergone radiofrequency ablation with prompt recurrence. Five of our patients (14%) did not show complete clearance, with two of our cases having 50% reduction. The results of Sacchidanand and Purohit⁵ i.e. 100% patients with clearance, could have been different if he increased his study population.

Matsumoto *et al.*⁶ used sclerotherapy in 9 patients with pyogenic granuloma and all patients showed complete clearance. The difference from our study can be explained as Matsumoto *et al.*⁶ used monoethanolamine oleate as sclerosing agent and we used sodium tetradecyl sulfate. Moreover, the sample size was small as compared to ours.

All of our patients who had complete clearance showed no recurrence at three months follow up period. Matsumoto *et al.*⁶ had a similar observation. None of his patients had recurrence. Similarly, Sacchidanand and Purohit⁵ also reported no recurrence at three months follow-up. The conventional treatment for pyogenic granuloma is surgical excision with a recurrence rate of 16%.⁹

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