CASE SERIES

USE OF WATER FOR INJECTION AS SCLEROSING AGENT : A CASE SERIES

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ABSTRACT

Reactive gingival lesions like pyogenic granuloma, peripheral giant cell granuloma, and fibroma are commonly seen in oral cavity. These lesions are sessile or pedunculated, inflammatory, highly vascular with fragility of tissues and have tendency to bleed moderate or profusely. The treatment is complete surgical excision with proper curettage of the base of the lesion to avoid recurrence.

Treatment with sclero therapy prior to surgery reduces vascularity of the lesion making it more fibrotic and aids in proper tissue management. There are different types of agents that can be used in sclerotherapy. Some of these agents can be toxic to the tissues; while boiling water for injection (WFI) is highly pathogen free, non-toxic, easily available, and economic. WFI can be usedas sclerosant in such circumstances, prior to surgical excision. This paper illustrates the remarkable outcome when WFI is used as an agent in sclerotherapy in gingival growth with significant reduction of the fragility of the tissues making it more fibrotic, reduction of the vascularity and size of the growth and helping in proper surgical excision in a case series of four different cases.

KEY WORDS

Reactive gingival lesions, Sclerotherapy, Water for injection, management of per-op bleeding.

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INTRODUCTION

Gingival growths are usually inflammatory in nature rather than neoplastic.[1] These lesions comprise a group of lesions called reactive gingival lesions.[1] Some of the common examples of these lesions are pyogenic granuloma, peripheral giant cell granuloma, fibrous epulis etc.[1,2] These lesions are either sessile or pedunculated[2] often with ulcerated surface epithelium and have a tendency of spontaneous bleeding or bleeding under slightest provocation.[1,3]

The idea was reduction of inflammation and vascularity of the gingival growth prior to surgical excision. Sclerotherapy[4] was targeted prior to surgical excision which caused destruction of endothelial cells and abnormal blood vessels of the growth with fibrosis, reduction in size of the growth and complete stoppage of spontaneous bleeding thus helping pre and per operative tissue management during excision and complete curettage of the tissues.

Various agents are in use for sclerotherapy like sodium tetradecyl sulphate (e.g.– Setrol 3%) boiling water[5] etc. We used intralesional injection of water for injection in boiling condition as sclerosant. Water for injection is sterile water manufactured by double sterilization process.

MATERIAL AND METHODS

This case series was done in 4 patients who reported at the Department of Periodontics at Burdwan Dental College and Hospital, Purba Bardhhaman, West Bengal. Ethical permission was obtained from the ethical committee of the college.

CASE 1:

A 32-year-old male patient reported at the Department of Periodontics at Burdwan Dental College and Hospital with a chief complaint of recurrent gingival growth of about 2cm in diameter present in 44 and 45 regions. The growth was very fragile, lobulated, and diffused with a very fiery red

color which had a tendency of spontaneous bleeding on slightest provocation.

Routine hemogram of the patient was found to be normal. IOPA X-ray showed no bony involvement.

On day 1, a thorough oral prophylaxis was performed. An ampule of WFI was placed in boiling water of boiler for 10 mins to make it sufficiently hot and injected into the gingival growth from various directions with the help of 27gauge needle. While injecting, the lesion got blanched. The same procedure was repeated on day 7. Excision along with curettage was done on the 14th day.

CASE 2

A 45-year-old male patient reported at the Department of Periodontics at Burdwan Dental College and Hospital with a chief complaint of gingival growth. It was present in 16 and 17 regions with a dimension of 3 cm x 1.5 cm. The growth was red in color, sessile, soft in consistency, and had a tendency of spontaneous bleeding on slightest provocation. Blood picture of the patient was normal. IOPA X-ray showed no bony involvement.

On day 1, thorough oral prophylaxis was done following which water for injection was injected intralesional in boiling condition after placing the ampoule in sterilizer for 10 minutes prior to injection. The growth got blanched during injection. After 7 days of intralesional injection, surgical excision was done.

CASE 3

A 49-year-old male patient reported at the

Fig 1:First day appearance of the growth

Fig 2: After 14 days of application of sclerosing agent, the growth became fibrotic

Fig 3: First day appearance of the growth with redness and tendency of bleeding

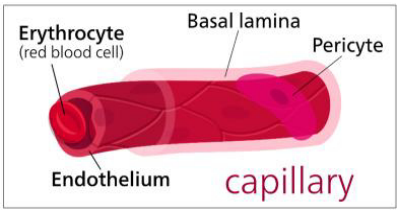
Fig 4: After 7 days of intralesional injection of WFI the growth reduced in size and became fibrotic with color change.

Fig 5: First day appearance of the growth with redness and spontaneous bleeding

Fig 6: 7days post sclerotherapy with reduction in size of the lesion

Fig 7: First day appearance of the growth having bleeding tendency with slightest provocation

Fig 8: Shrinkage of the growth after sclerotherapy



Department of Periodontics at Burdwan Dental College and Hospital with a chief complaint of gingival growth and bleeding.

It was present in 13 and 14 regions with a dimension of 1.5 cm x 1.5 cm. The growth was very fragile, soft, with a fiery red color which had a tendency of spontaneous bleeding on slightest provocation. Routine hemogram of the patient was normal. IOPA X-RAY showed no bony involvement.

On the first day, after completion of thorough oral prophylaxis, sclerotherapy was done by injecting water for injection into the lesion in hot condition in a similar manner followed by surgery after 7 days.

CASE 4

A 36-year-old male patient reported at the Department of Periodontics at Burdwan Dental College and Hospital with a chief complaint of gingival growth and gingival bleeding. The growth was present in interdental region of 22 and 23 with a dimension of 1cmx1cm. The growth was very fragile, soft, and sessile, with a history of occasional bleeding. Blood picture of the patient was normal. In this case the growth showed bony involvement and caused erosion of bone.

On the first day, Sclerotherapy was done with intralesional injection with water for injection in boiling condition. Surgical excision was done after one week.

RESULTS

CASE 1

After 7th day the lesion changed its color from fiery red to reddish pink with reduced fragility and complete stoppage of bleeding on provocation. After giving the second injection, it became fibrotic and reduced in size from 2cm to 1cm diameter. Thereafter the growth was excised and the defect created was repaired by coronally repositioned flap. Healing was good with no recurrence. According to the biopsy report the growth was irritation fibroma.

CASE 2

After 7 days of intralesional injection, the growth showed changes in inflammatory features, reduced in size, and became fibrotic. Surgical excision was done thereafter. Healing was good with no recurrence. Biopsy report suggested the growth was lobular capillary hemangioma.

CASE 3

7 days post sclerotherapy, it was observed that the growth was fibrotic in nature with a remarkable change in color. This change in color and consistency made surgical excision easier with less bleeding. Post operative healing was good. Biopsy report confirmed the growth was pyogenic granuloma

CASE 4

Post sclerotherapy after 7 days there was change in color, consistency of the growth and there was shrinkage. Surgical excision was done. Healing was uneventful and histopathological examination showed the growth was lobular capillary hemangioma.

DISCUSSION

Various sclerosant have been used in medical practice since 18th century primarily for the treatment of varicose veins and other vascular malformations. When injected in vessels, sclerosant cause targeted destruction of small vessels, varicose veins, and other vascular malformations. The sclerosants which are used are boiling water, 3% sodium tetradecyl sulphate, alcohol, sodiummorrhuate, quinine, urethane, silvernitrate, iron, and zinc chloride.[6]

Hot water causes destruction of tunica intima, by releasing heat energy. Thus, blood supply of a lesion or growth is blocked causing shrinkage of the lesion. In gingival reactive lesions, there are proliferations of capillaries, mostly. A capillary is encircled with single layer of endothelial cells.[7] While injecting WFI from multiple directions, it punctures the capillaries and the instilled WFI thus causes destruction of endothelial cells of the capillaries. This is the rationality of use of WFI in this case series.

There are different types of water for medical use.[8]

i. Bacteriostatic water : Used to dilute sterile pharmaceuticals

ii. Sterilized WFI : This has undergone additional sterilization process, used to dissolve or dilute a substance or preparation to be administered via injection or by intravenous method.

iii. WFI : Water for injection is sterile, non-pyrogenic distilled water. It comes in a single dose container with a pH of 5.5, used for administering medications. Water for injection is prepared under the following steps : a) Prefiltration procedure which includes softening, dechlorination, ionization, reverse osmosis, and UV distillation. b) the distillation which is done by three processes is multiple effect distillation, vapor compression distillation and membrane-based distillation.

Histopathology varies according to the type of

lesions. In Pyogenic granuloma, infiltration of inflammatory cells, proliferations of the endothelial cells can be found in connective tissue stroma; Peripheral giant cell granuloma shows abnormal formation of blood vessels and has a high bleeding tendency; in Fibrous epulis there is infiltration of the inflammatory cells, often with calcification foci of either bone or cementicles and named accordingly as peripheral ossifying fibroma or peripheral cementifying fibroma. However bleeding in these lesions can occur from ulceration of surface epithelium. So, to combat pre and per operative bleeding and to ensure proper surgical maneuver, sclerotherapy after complete oral prophylaxis and prior to surgery is the treatment of choice.

CONCLUSION

Review of literature shows us that 3%Setrol have been used for sclerotherapy in most of the intraoral growth cases. It has inflammatory side effects which can cause pain and discomfort. There are hardly any articles which demonstrated water for injection can be used as sclerosant. However, Water for injection is economical, easily available, sterile, nontoxic and has no side effects. It can be effectively used as a sclerosing agent in gingival growth cases. Further studies with greater number of samples will certainly establish the procedure in a more acceptable manner.

REFERENCES

1.Kfir Y, Buchner A, Hansen LS. Reactive lesions of the gingiva. A clinicopathological study of 741 cases. J Periodontol. 1980 Nov;51(11):655-61.

2. Buchner A, Calderon S, Ramon Y. Localized hyperplastic lesions of the gingiva: a clinicopathological study of 302 lesions. J Periodontol. 1977 Feb;48(2):101-4.

3.Hunasgi S, Koneru A, Vanishree M, Manvikar V. Assessment of reactive gingival lesions of oral cavity: histopathological study. J Oral MaxillofacPathol. 2017 Jan-Apr;21(1):180

4. Sacchidanand S, Purohit V. Sclerotherapy for the treatment of pyogenic granuloma. Indian J Dermatol. 2013 Jan;58(1):77-8. Retraction in: Indian J Dermatol. 2014 May; 59(3):296.

5.Mishra S, Acharya S, Kar A, Mohanta FM, Samal SR. Intralesional 3% sodium tetradecyl sulphate versus hot water in oral cavity hemangioma: a comparative study. Int J Otorhinolaryngol Head Neck Surg 2021; 7:1768-71

6. S Dev Promit, N Vineet, D P Krishna, S Nairita; Role of Sclerosing agent in the management of oral soft tissue growths- A case report series; Journal of Case Reports in Medical Science; vol 7, issue 2, 2021, pg-7-13

7.Tucker WD, Arora Y, Mahajan K. Stat Pearls [Internet]. Stat Pearls Publishing; Treasure Island (FL): Aug 8, 2023. Anatomy

8. www.waterforinjection.com/WFI and compendial waters in pharmacopoeias/07 November 2024.