

Intralesional Sclerotherapy with Polidocanol in the Management of Head and Neck Vascular Lesions

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ABSTRACT

Introduction

Vascular lesions (Hemangioma or vascular malformation) in the head and neck region are quite common and need therapeutic intervention if they become symptomatic or cosmetically unacceptable. Different therapeutic modalities including cryotherapy, corticosteroids, laser therapy, sclerotherapy, surgery and/or embolization are available. Advances in laser surgery as well as sclerotherapy techniques have improved our ability to treat extensive lesions. Surgical excision sometimes becomes very difficult due to massive per-operative bleeding and proximity to major neurovascular structures. In this study we have tried to find a simpler, easily available, safe and cost-effective therapy to treat these vascular lesions.

Materials and Methods

A pilot case study was conducted in a tertiary care hospital in Kolkata for a period of one year. Polidocanol was selected as the sclerosing agent for treatment of head and neck vascular lesions for its safety and its local anesthetic effect. 3% Polidocanol was injected in 20 lesions.

Results

20 patients with head and neck vascular lesions treated with polidocanol sclerotherapy were followed up for 12 months. The study included 20 patients (12 female and 8 male) with mean age 20.3 years (range 6-62 years). Of these 20 patients 14 had 90% to 100% result and in 6 patients we obtained only mild improvement.

Discussion

Sclerotherapy is now becoming the first choice of treatment in head and neck vascular lesions. Polidocanol is a mixture of 5% ethyl alcohol and 95% hydroxypolyethoxydodecane, the detergent action of which induces a rapid overhydration of endothelial cells, leading to vascular injury and regression of vascular lesions. As the same time it is a local anesthetic, so treatment is painless.

Conclusion

It is a less invasive, cost effective, painless OPD based management for head and neck vascular lesions having good functional and aesthetic outcome.

Keywords:

Vascular Malformations; Hemangioma; Sclerotherapy, Polidocanol

The field of vascular anomalies has been obscured by its own bewildering, descriptive and histologic nomenclature.¹ Terminological confusion has led to improper diagnosis and illogical treatment. The clinical presentation of vascular lesions can be confusing, because they appear in the same color spectrum of

blue, pink and red. Hemangioma has been applied as a generic term to describe various vascular lesions with distinctive natural histories and differing etiologies. The most common localized tumor of the head and neck is the hemangioma. Infantile hemangioma is the most common tumor of infancy occurring in 4% to 10% of children. The incidence is increased (23%) in premature babies weighing less than 1kg. These are more common in girls (F:M=3:1) and in caucasians than dark skinned children.

In 1982, Mulliken and Glowacki presented a biological classification based on the clinical characteristics, natural

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history and cellular features.² This initial classification was slightly modified and accepted at the 1996 meeting of the International Society for the study of vascular Anomalies (ISSVA) in Rome. Two major types of superficial vascular lesions are distinguished: vascular tumors (hemangioma being most frequent) and vascular malformations.

Based on individual parameters (such as diameter, location and growth dynamics), different therapeutic modalities,³ including cryotherapy,⁴ corticosteroids, laser therapy, sclerotherapy, surgery and/or embolization can be performed. Advances in laser surgery as well as sclerotherapy techniques have improved our ability to treat extensive lesions and these have also improved patient's quality of life. Complete surgical excision is quite impossible because the facial muscles must be respected to maintain good functional ability and important neurovascular structures must be preserved. Sometimes the procedure can fail because of massive per-operative bleeding. On the contrary, sclerotherapy^{5,6} of vascular lesions is a relatively simple, effective and inexpensive method that is valuable as well as promising. Various agents can be used for sclerotherapy, e.g. hypertonic saline, absolute ethanol, sodium tetradecyl sulfate (STDS); ethanolamine oleate and polidocanol.^{7,8,9}

Materials and Methods

Between July 2014 and June 2015 we have performed this pilot case study in the Dept. of Otorhinolaryngology. We have selected 20 patients with various head and neck vascular lesions and they received intralesional sclerotherapy using Polidocanol in this institute. Their age ranged from 6 to 62 years (mean 20.3 years) and male: female ratio was 3:2. In all cases, the written informed consent was obtained from the patients or their parents before the procedure. The diagnosis was made by a combination of clinical presentation and gross anatomical findings. Patients with large lesions underwent CECT and/or ultrasound¹⁰ with color doppler study to assess deep extension and flow dynamics. MRI and angiography was not done.

All the patients received sclerotherapy in the OPD and the sclerosing agent used was 3% polidocanol.^{11,12,13}

In cases of intraoral vascular lesions 10% lignocaine aerosol spray was used for better patient compliance. With head light illumination, 3% polidocanol was injected into the lesion using 22 gauge needle with the patient in sitting position.

Depending on the size and location of the lesion, 2 to 5 sites were punctured. After confirming by aspiration that the needle was inside the venous lumen, the drug was injected. After the procedure the lesion was compressed with sterile cotton for 10 minutes. After one hour of observation the patient was released with prescription of some analgesics and/or oral rinse. The patient was reviewed after 7 days and next session was scheduled after 2 to 3 weeks depending on clinical improvement. The number of sessions of sclerotherapy depended upon size of the lesion.

Results

20 patients (12 female and 8 male), aged 6 to 62 years, with an average age 20.3 years were included in our study. Of these 20 vascular lesions, 6 were small (<1cm), 10 were medium (1 to 3cm) and 4 were large (>3cm) in size. (Fig. 1) Intraoral mucosal lesions were more common with the tongue being the most common anatomical site. (Fig. 2)

Scoring system: To evaluate improvement we selected five criteria; Color (Blue to normal), Size, Swelling, Cosmetic result and the patients' opinion. Grading of improvement was: 1 - partial resolution; 2 - complete resolution and 0 - no change. A score of 10 indicated

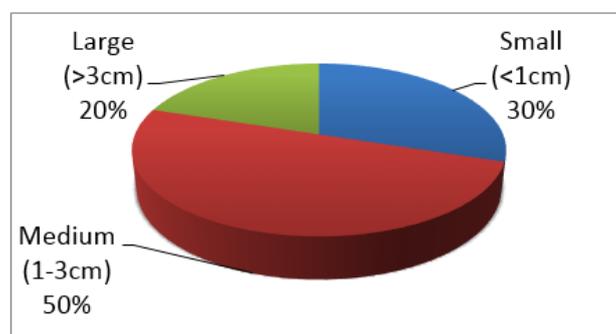


Fig.1 Size of the vascular lesions in the head and neck

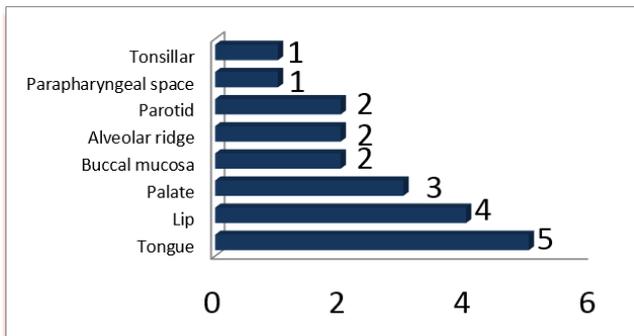


Fig. 2 Anatomical sites of the vascular lesions

complete cure (100% result). (Fig. 3)

Of these 20 patients, 14 had a 80% to 100% improvement and in 6 patients we obtained only mild improvement, the mean score being 7.75. (Fig. 4) Except mild swelling for 2-3 days, no complication occurred in these patients. The number of sessions of sclerotherapy varied from 2 to 6 depending upon the size and anatomical site of the lesion. (Fig. 5).

Discussion

The International Society for Vascular Anomalies (ISSVA) has adopted the classification of vascular anomalies described by Mulliken and Glowacki.² They originally proposed the biological classification of vascular anomalies as two major categories: namely, vascular tumor (hemangioma) and vascular

malformation. This classification has made the diagnosis and the therapeutic strategy more appropriate. A surgical excision is thought to be best option for the treatment of vascular malformation. However, an extensive and aggressive resection may cause severe complications. Moreover, a complete surgical excision is often not possible because of functional and anatomical limitations. Some recurrent cases after surgical excisions were reported perhaps due to difficulties in achieving a complete resection. Therefore, the indications for surgical treatment should be limited and alternatively sclerotherapy, which can induce a regression of vascular lesions, is now becoming the first choice of treatment.

Polidocanol, ethanolamine oleate, sodium tetradecyl sulfate (STDS) and ethanol^{7,8,9} are commonly used as sclerosing agents. Of these ethanol is thought to be the most effective sclerosing agent and it achieves a low recurrence rate. However it may cause wide range of complications like skin necrosis. In addition ethanol has a neurolytic effect and direct toxic effect on myocardium. Ethanolamine oleate¹⁴ can cause hemolytic renal failure. We can avoid these complications using polidocanol as sclerosing agent.

Polidocanol was developed as a local anesthetic¹¹ in France in 1950s, and during its use an unintended sclerosant effect was noted. Physicians then used polidocanol as a less painful sclerosant and found it effective too. Polidocanol was approved by the USFDA in March 2010 to treat small varicose veins in the legs.



Fig. 3 Haemangioma of tonsil (before and after sclerotherapy)

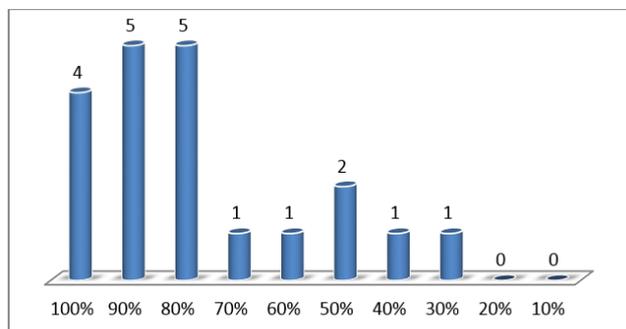


Fig. 4 Improvement after sclerotherapy

Polidocanol is a mixture of 5% ethyl alcohol and 95% hydroxypolyethoxydodecane, the detergent action of which induces a rapid overhydration of endothelial cells, leading to vascular injury and regression of vascular lesions.¹⁵

Regardless of the sclerosing agent that is selected, multiple treatment sessions may be necessary and it is related to the size of the lesion and its anatomical location. Deep seated vascular lesions require image guided technique for better results.

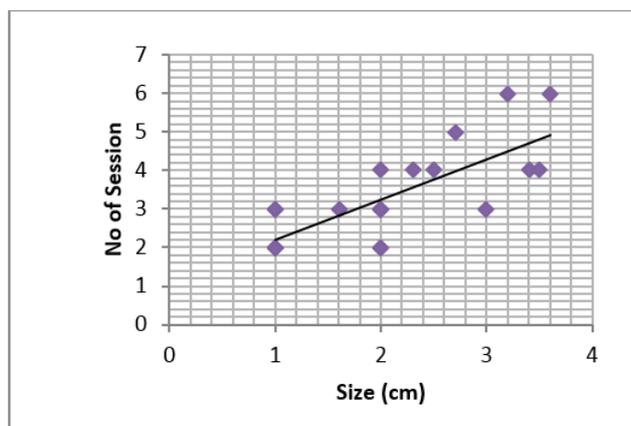


Fig. 5 Number of sessions

Conclusion

In the current study we found that, success depends on proper case selection and correct application technique. It is less invasive, inexpensive, less destructive painless OPD procedure to treat vascular lesions having good

functional and aesthetic value.

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