

Effectiveness of sclerotherapy injection in haemangioma of the head and neck region



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ABSTRACT

Background: Hemangiomas are benign tumors that originate from blood vessels. Sclerotherapy effectively treats benign vascular lesions, especially small lesions located at sites with aesthetic impact. Polidocanol is the solution most commonly known to work by causing a local inflammatory reaction, thrombosis obliteration of the hemangiomatous space, and fibrosis of the endothelial space, leading to the lesion's regression. This study evaluated the effectiveness of polidocanol sclerotherapy injection therapy (Aethoxysklerol 3%) in patients with cavernous haemangioma at Dr. Soetomo general hospital.

Method: This study is a cross-sectional correlative analysis study, with research samples derived from medical records of patients with cavernous type haemangioma who were indicated to undergo sclerotherapy injection therapy (Aethoxysklerol 3%) at Dr. Soetomo general hospital in the period 2017-2023 who met the inclusion and exclusion criteria. The data obtained will be processed using SPSS software version 25.0 for Windows. Statistical tests were significant if the p-value was <0.05.

Results: There were 26 samples in this study, with the gender of patients mostly female (65.4%) and aged >20 years (38.5%). The most common location was buccal region hemangioma (34.2%). The results of the therapeutic response showed that 50% of the majority of patients not well responded, 34,2% showed no response, and only 15.4% responded well with a p-value = 0.000.

Conclusion: Injection sclerotherapy using polidocanol (Aethoxysklerol) in 3x administration sessions is a treatment method that has not been effective in treating hemangioma.

Keywords: hemangioma, sclerotherapy injection, therapy efficacy.

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INTRODUCTION

Hemangiomas are benign tumors that originate from blood vessels. Based on epidemiological studies, the incidence of hemangiomas can be found in 14 out of 100 children born with vascular lesions. Ten percent of these newborn children require careful examination, while other children have insignificant (small and superficial) hemangiomas.¹ These lesions are called superficial hemangiomas when they are flat and reddish. In contrast, those that occur deep under the skin and appear bluish are called deep hemangiomas.¹ Hemangiomas can occur in any area of the body. Still, the skin and oral mucosa in the region of the lips, tongue, and buccal mucosa are the most commonly affected areas.^{2,3}

Management of hemangiomas can be done by conventional surgical excision, which is feasible, particularly for smaller circumscribed lesions and peripheral hemangiomas. However, complications

arising from conventional invasive surgical procedures, such as excessive postoperative bleeding, led to the use of other distinct therapeutic alternatives, including systemic corticosteroids, laser therapy, cauterization, cryotherapy, radiotherapy, and sclerotherapy. These treatment modalities can be performed alone or concurrently.³

Nowadays, sclerotherapy is frequently used as its effectiveness and ability to preserve surrounding tissue have been reported in several studies. Sclerotherapy effectively treats benign vascular lesions, especially small lesions located at sites with aesthetic impact. Frequently used sclerosing agents are sodium morrhuate, sodium psylliate, hypertonic glucose solution, sodium tetradecyl sulfate, ethanolamine oleate, and polidocanol (aethoxysclerol 3%, 1% or 0.5%).³ Polidocanol is the solution most commonly known to work by causing a local inflammatory reaction, thrombosis obliteration of the hemangiomatous space,

and fibrosis of the endothelial space, leading to the lesion's regression.⁴

Until now, no research has examined the effectiveness of sclerotherapy injection therapy, especially Aethoxysklerol, in patients with cavernous haemangioma at Dr. Soetomo general hospital. With the reasons mentioned above, it is necessary to research the effectiveness of polidocanol sclerotherapy injection therapy (Aethoxysklerol 3%) in patients with cavernous haemangioma at Dr. Soetomo general hospital.

MATERIALS AND METHODS

A cross-sectional research design and quantitative research methods are being used in this study's correlative analysis. The study sample consisted of the medical records of cavernous-type haemangioma patients who matched the inclusion and exclusion criteria and were prescribed sclerotherapy injection therapy (Aethoxysklerol 3%) at Dr. Soetomo

general hospital between 2017 and 2023. The inclusion criteria were medical record information from patients with head and neck hemangiomas of all ages who underwent up to three injectable treatments with Aethoxysklerol 3% sclerotherapy at Dr. Soetomo general hospital between 2017 and 2023. Medical records of hemangioma patients who received various therapeutic modalities while receiving 3% Aethoxysklerol sclerotherapy injection therapy at Dr. Soetomo general hospital in 2017–2023 became the exclusion criteria. Samples were taken by purposive sampling based on the inclusion and exclusion criteria.

The data obtained will be processed using SPSS software version 25.0 for Windows. Statistical tests are declared significant when the p-value is <0.05 . The data normality test was conducted with the Kolmogorov-Smirnoff test. If the data distribution is normal, parametric data analysis will be carried out with the T-independent test. If the data is not normally distributed, non-parametric tests will be conducted with the Mann-Whitney test.

RESULTS

A total of 26 samples were enrolled according to the inclusion and exclusion criteria (Table 1). The gender composition of cavernous hemangioma patients in this study was mostly female, comprising 17 patients (65.4%), while males included 9 patients (34.6%). The age range of the patients was very diverse, ranging from 3 to 66 years old, with the majority of patients aged >20 years old reaching 38.5%. The hemangioma region showed significant variation, with buccal hemangioma being the most common with 9 patients (34.2%). The results of therapeutic response and changes in hemangioma lesion size showed that most patients had an unfavorable response (lesion size decreased $<50\%$). In as many as 13 patients (50%), the results showed no response (lesion size remained

or increased in size), as many as 9 patients (34.2%), and only 4 patients (15.4%) had a satisfactory response.

The results of data normality analysis using the Shapiro-Wilk test had a p-value >0.05 for the primary diagnosis, indicating that the data had a normal distribution. However, other variables, such as gender, age, secondary diagnosis, complication diagnosis, hemangioma location, treatment modality, sclerotherapy injection therapy, and treatment response, all had significance values of $p<0.05$, indicating that the data in these variables did not have a normal distribution.

The results of the Chi-Square Test in Table 2 illustrate the relationship between therapeutic response and the use of sclerotherapy injection therapy (Aethoxysklerol) in 3 therapy sessions. These statistical test results show a significant relationship between sclerotherapy injection therapy and therapeutic response and hemangioma lesion size in patients (p-value =0.000). This finding provides strong evidence of the relationship between the frequency

of sclerotherapy injection therapy and therapeutic response, as seen from the size of hemangioma lesions in patients in this study.

DISCUSSION

Hemangiomas are tumors that commonly occur in the major salivary glands and are most common in infancy but are rare in adult salivary glands. Unlike capillary hemangiomas, adult hemangiomas are generally cavernous usually found in children. Cavernous hemangiomas have more defined borders and tend not to undergo significant changes in size. Hemangiomas of the major salivary glands, particularly of the parotid gland, are the most common type, while submandibular gland hemangiomas are very rare.⁴

Histologically, hemangiomas are categorized into capillary, cavernous, or mixed types. About 80% of hemangioma cases are single lesions, while 20% are bilateral lesions.⁵ Hemangiomas also have differences in incidence between the sexes, with a male-to-female ratio of

Table 1. Characteristics of sample

Characteristics	n	%
Gender		
Man	9	34,6
Woman	17	65,4
Age (years)		
<10	8	30,8
10 – 20	8	30,8
>20	10	38,5
Hemangioma Regio		
Temporal	1	3,8
Buccal	9	34,2
Labialis	6	22,8
Frontalis	1	3,8
Mandibula	1	3,8
Lingual	4	15,2
Palatum	1	3,8
Zygoma	1	3,8
Coli	2	7,6
Therapeutic Response		
Well response (reduced lesion size $>50\%$)	4	15,4
Poor response (reduced lesion size $<50\%$)	13	50
No response (remained the same or increased in size)	9	34,2

Table 2. Relationship between therapeutic response and the use of sclerotherapy injection therapy

Therapeutic response and size of hemangioma	Number of hemangioma patients who received sclerotherapy injection therapy (Aethoxysklerol) 3x	p-value
Well response (reduced lesion size $>50\%$)	4	0,000
Poor response (reduced lesion size $<50\%$)	13	
No response (remained the same or increased in size)	9	

approximately 1:3, consistent with the study results, with most hemangiomas occurring in females (65.4%). However, intraoral capillary hemangiomas are rare, with the incidence ranging from 0.5-1.0% of all intraoral neoplastic tumors, mainly affecting women in the second and third decades of life.⁶

The study by Takaishi et al. also provided a clinical description of 31 cases of sinonasal hemangioma, including age, gender, symptoms, size, and anatomical location of the lesion. The age of the patients ranged from 23 to 86 years, indicating a variation in the age of hemangioma onset. The size of the hemangiomas ranged from 4 to 32 mm, with the most frequent lesion locations in the inferior concha and nasal septum, as well as the Kiesselbach area of the nasal septum.⁷

Sclerotherapy with polidocanol (Aethoxysklerol) is a minimally invasive treatment method with significant advantages, especially in managing hemangiomas. The procedure has negligible side effects and a high patient compliance rate without causing excessive morbidity. Furthermore, a main advantage of sclerotherapy is its ability to reduce the lesion size without involving surgical procedures that could potentially leave unwanted scars.⁸

This study evaluated the association of sclerotherapy injection therapy frequency (3 sessions) with therapy response and hemangioma lesion size in patients. The results of this study showed that the majority of patients had an unfavorable response (lesion size reduced <50%) in as many as 13 patients (50%), indicating that sclerotherapy injection therapy with Aethoxysklerol had a significant relationship with the response to therapy and hemangioma lesion size in patients. This indicates that the frequency of therapy can affect treatment outcomes.

Other studies, such as those conducted by Sangma et al., Agarwal, Bhadoria et al., and Singh et al., also support the effectiveness of using polidocanol (the active ingredient in Aethoxysklerol) in the treatment of hemangiomas. The study by Sangma et al. involved 55 patients with hemangiomas, with most lesions ranging between 5-8 cm in size. The results showed

variations in patient response, with 30% of patients experiencing complete regression of the lesions, 37.5% experiencing a reduction in lesion size to half the original size, and 32.5% experiencing only slight regression.⁸⁻¹¹

These and other findings provide a better understanding of the factors influencing a patient's response to aethoxysklerol sclerotherapy. This can assist medical practitioners in choosing a more targeted and effective treatment approach for each case. All these findings, including this study's results, contribute to developing better treatment guidelines for patients with hemangiomas and similar vascular conditions. This study's sample was relatively small compared to other studies that investigated larger populations. Based on the results of this study, additional research can be carried out to understand better and comprehensively treat hemangioma cases in the community.

CONCLUSION

Sclerotherapy using polidocanol (Aethoxysklerol) in three times administration sessions is ineffective in treating hemangiomas. Despite the advantages of the procedure being minimally invasive, having few side effects, and high patient compliance rates and the use of Aethoxysklerol as a sclerosing agent has been shown to stimulate a local inflammatory reaction, resulting in obliteration of hemangiomatous vessels, fibrosis of the endothelial cavity, and eventual regression of the lesion.

ETHICAL CLEARANCE

Patient approval has been obtained in this study and fulfilled ethics approval from the Ethics Committee of Dr. Soetomo general hospital No. 0786/KEPK/IX/2023

CONFLICT OF INTEREST

No competing interests were declared.

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AUTHOR CONTRIBUTION

All of the authors equally contributed to the study.

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