Original Research Paper

Volume - 14 | Issue - 04 | April - 2024 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Dental Science

"EFFECTIVE MANAGEMENT OF A COMPLEX VENOUS MALFORMATION WITH INTRALESIONAL BLEOMYCIN": A CASE REPORT AND REVIEW OF LITERATURE

Dr Bhavya Sharma PG Trainee, Government Dental College, Indore.

Dr Jyotirmay Chakrawarty Consultant Oral & Maxillofacial Surgeon.

Dr Deepak Kumar Khareliya PG trainee, government dental college, Indore.

ABSTRACT This study delves into the treatment efficacy of intralesional bleomycin injections for vascular malformations, showcased through a case involving a 14-year-old girl with facial swelling diagnosed as a vascular malformation. The patient underwent four sessions of bleomycin injections, resulting in a notable decrease in swelling without any adverse effects.

KEYWORDS : Vascular Malformation, Bleomycin Injection, Case Study, Literature Review.

INTRODUCTION

Vascular malformations, characterized by improperly developed blood vessels, can appear throughout the body, leading to severe consequences such as deformation, hemorrhage, and impairment in function. Addressing these conditions requires a comprehensive approach that spans diagnosis, categorisation, and management, reflecting significant advancements over time (1,2). Intralesional bleomycin injections have gained attention for their success in treating low-flow vascular malformations, such as venous and lymphatic malformations, due to bleomycin's ability to induce fibrosis and reduce the size of these malformations with minimal side effects (3,4). The need for customised treatment approaches is emphasised when comparing bleomycin to other sclerosants, particularly for malformations in sensitive areas like the head and neck (5,6). While generally yielding positive results, the risk of side effects, including hyperpigmentation, highlights the importance of meticulous patient selection and treatment planning (7).

Case Report

A 14-year-old girl reported a four-year history of facial swelling on the right lower side. Initially noticed as a slight swelling, it had gradually enlarged. Clinical examination revealed a diffuse, soft swelling with small, hard, movable lumps. Diagnosed with a vascular malformation, imaging studies confirmed the presence of a venous malformation. Treatment with intralesional bleomycin injections significantly reduced swelling after four treatments without any adverse effects.

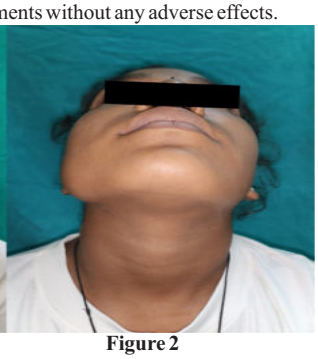

Figure 1 **Figure 2**

Profile view of the patient showing swelling over the right lower side of her face pre-operative- Front View

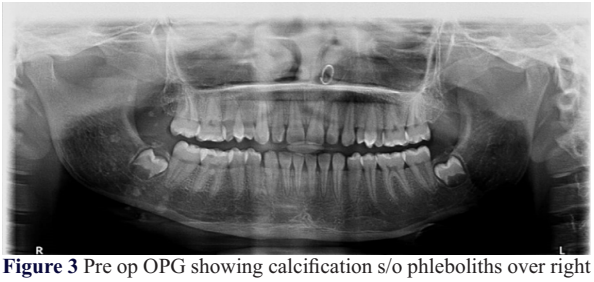

Figure 3 Pre op OPG showing calcification s/o phleboliths over right side

Figure 4 Post op front profile after 4 sessions of intralesional bleomycin therapy

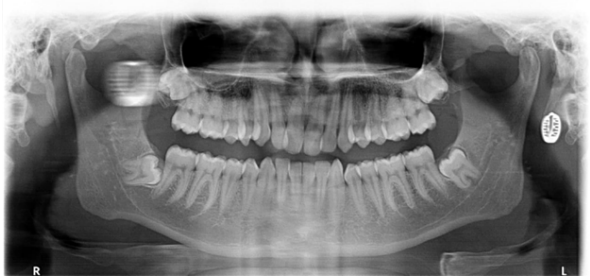

Figure 5 POST OP OPG showing Reduced size of phleboliths

DISCUSSION

The review of literature indicates the promising role of bleomycin in managing vascular malformations, especially those not amenable to surgical excision. Compared to other sclerosing agents, bleomycin offers a favorable safety profile and effectiveness in reducing lesion size and symptom relief.

The effectiveness of bleomycin in managing vascular malformations, particularly those not suited for surgical removal, is highlighted. The comparison of bleomycin with other sclerosing agents shows its favorable safety profile and efficacy. Despite minor complications like hyperpigmentation, bleomycin's low risk of severe side effects and minimal systemic presence post-injection mark it as a safer alternative for low-flow vascular malformations (8)

The discussion(8) highlights the efficacy and safety of intralesional bleomycin in the treatment of low-flow vascular malformations (VMs), comparing its outcomes and complications with other sclerotherapy agents such as sodium tetradecyl sulfate, polidocanol, and pure ethanol. Bleomycin, discovered in 1966, acts by inhibiting DNA synthesis and sclerosing vascular endothelium, showing significant improvement in VMs with minimal local and systemic

complications. Studies and meta-analyses cited in the discussion report high rates of improvement and resolution in patients treated with bleomycin, with more than 60% response in all patients and nearly complete resolution in a significant number. The discussion also notes the occurrence of minor complications such as hyperpigmentation, which resolved on its own. Compared to other agents, which may cause more severe local and systemic side effects, bleomycin is highlighted as a safer alternative due to its negligible presence in the bloodstream after injection and its associated lower risk of complications. This underscores the potential of bleomycin as a preferred treatment option for low-flow VMs, given its effectiveness and safety profile(9).

The Study emphasizes the use of percutaneous sclerotherapy, specifically intralesional Bleomycin injection (IBI), as an effective and safe treatment for head and neck haemangiomas and slow-flow vascular malformations. Despite the variety of sclerosing agents available, such as ethanol, OK432, and Ethibloc, each with their own efficacy rates and potential complications, Bleomycin was chosen for its affordability, availability, and low risk of severe side effects. Bleomycin, a cytotoxic glycoprotein antibiotic discovered in 1966, inhibits DNA synthesis and has a sclerosing effect on endothelial cells. It showed more than 50% improvement in 81% of patients, with 28% completely cured, and minimal complications were reported, significantly less severe than those associated with other agents. Notably, there were no cases of pulmonary fibrosis, a major concern with systemic Bleomycin use in cancer treatment, likely due to the lower doses used in sclerotherapy. The study suggests that IBI should be considered a primary treatment option for head and neck haemangiomas and slow-flow vascular malformations before surgical excision due to its efficacy, safety, and non-invasive nature (9).

The Study (4) highlights a comprehensive review of twenty-seven studies involving 1325 patients treated with intralesional bleomycin injections for vascular malformations. The major findings indicate that intralesional bleomycin is as effective as other commonly used sclerosants, such as ethanol and sodium morrhuate, in reducing the size of lymphatic and venous malformations. Importantly, bleomycin stands out in terms of safety, with a significantly lower rate of adverse events compared to other sclerosants. Notably, severe complications like facial nerve paralysis and skin necrosis were more frequently associated with ethanol use. Additionally, the reviewed literature did not support the concern of pulmonary fibrosis as a complication from intralesional bleomycin injections, as no cases were encountered across the studies. This suggests that bleomycin may be a preferable option for the treatment of vascular malformations due to its effective outcomes and superior safety profile.

CONCLUSION

Bleomycin injections offer a non-surgical, effective treatment for vascular malformations. They represent a promising option with a good safety profile. Ongoing research is encouraged to further define bleomycin's role and optimize dosing protocols.

Acknowledgments

We extend our gratitude to the patient and her family for their cooperation and consent for this case report. We also acknowledge the medical staff for their dedication and care provided throughout the treatment process.

{Availability of data and materials} None declared.

Authors contributions None declared.

Ethics None declared.

Conflicts of interest None declared.

Funding None declared.

REFERENCES

1. Ernemann U, Kramer U, Miller S, Bisdas S, Rebmann H, Breuninger H, et al. Current concepts in the classification, diagnosis and treatment of vascular anomalies. Eur J Radiol. 2010;75(1):2-11.
2. Greene AK. Vascular anomalies: Current overview of the field. Clin Plast Surg. 2011;38(1):1-5.
3. Muir T, Kirsten M, Fourie P, Dippenaar N, Ionescu GO. Intralesional Bleomycin Injection (IBI) treatment for haemangiomas and congenital vascular malformations. Pediatr Surg Int. 2004;19(12):766-73.
4. Horbach SER, Rigter M, Smitt JHS, Reekers JA, Spuls PI, van der Horst CMAM. Intralesional bleomycin injections for vascular malformations: A systematic review and meta-analysis. Plast Reconstr Surg. 2016;137(1):244-56.
5. Bajpai H, Bajpai S. Comparative analysis of intralesional sclerotherapy with sodium tetradecyl sulfate versus bleomycin in the management of low flow craniofacial soft tissue vascular lesions. J Maxillofac Oral Surg. 2012;11(1):13-20.
6. Love Z, Hsu DP. Low-flow vascular malformations of the head and neck: Clinicopathology and image guided therapy. J Neuro Intervent Surg. 2012;4(6):414-25.
7. Sainsbury DCG, Kessell G, Guhan A, Miller V, Abouzeid MR, Muir T. Unexpected hyperpigmentation following intralesional bleomycin injection. J Plast Reconstr Aesthet Surg. 2009;62(11):497-9.
8. Bhandari, P.S., & Srivastava, V. (2022). Safety and efficacy of intralesional bleomycin in vascular malformations: A review of the literature. Journal of Cutaneous and Aesthetic Surgery, 15(3), 233-240. Doi:10.4103/JCAS.JCAS_47_21.
9. Regmi, D., Bista, M., Shrestha, S., Chhetri, S.S., Shrestha, D., & Mahato, N.B. (2017). Percutaneous sclerotherapy for head and neck hemangiomas and vascular malformations: A study of 100 cases. Interventional Neuroradiology, 23(4), 414-423. Doi:10.1177/1591019917699988.