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Review Article

Intralesional Bleomycin Sclerotherapy in Children with Lymphangiomas: A Review Article

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Abstract

Lymphangioma is a benign tumor of lymphatic vessels. Swelling and cosmetic deformity are the most common symptoms. As a sclerosing agent, bleomycin has been used in the management of patients with these lesions with successful outcomes. In this review the topic is discussed, and a brief literature review is given. Intralesional injection of bleomycin in children with lymphangioma is an effective method of treatment and it usually achieves excellent results in most of the patients with minimal side effects.

Keywords: Lymphangioma; Bleomycin; Intralesional sclerotherapy

Introduction

Lymphangiomas are congenital hamartomatous malformations of lymphatic system and consist of cystic spaces of varying size. Head and neck are the most frequently affected sites accounting for 75% of all cases [1,2]. The reported incidence of lymphangioma is 1.5 to 2.8 per 1000 across both gender and all races [3]. It usually manifests at birth in up to 65% of cases and presents by 2nd year of life in 80-90%of cases [1,4,5]. Traditional management of lymphangioma is surgical excision and it is aimed to remove the involved tissue without sacrificing vital structures. This goal cannot usually be obtained with surgical intervention alone. Besides surgical treatment involves complications including wound infection, hemorrhage, unsightly scar, postoperative fluid accumulations, various nerve palsies and lymphorrhea [6]. Due to above mentioned situations, intralesional sclerotherapy of lymphangiomas has been popularized recently. In this review article, intralesional sclerotherapy of lymphangiomas with special relevance to bleomycin usage is reviewed and discussed under the light of relevant literature.

Discussion

Management of lymphatic malformations using sclerotherapy injections of different agents into the lesions became a treatment option when it was noted that lymphangiomas spontaneously involuted when they became infected. The first lymphangioma case treated by intralesional sclerotherapy was reported in 1933 using sodium morrhuate. Since then various sclerosing agents including OK 432, iodine, ethanolamine oleate boiling water, quinine, pingyangmycin, urethane, pure alcohol, sotradecaol, doxycycline, ethanol, sodium tetradecyl sulfate, acetic acid, hypertonic saline, ethibloc and bleomycin [3,7-10].

The first isolation of bleomycin was in 1966 by Umezawa as an anti-tumour, anti-viral and anti-bacterial agent [11]. The basic action of bleomycin is inhibition of DNA synthesis biochemically. Although the mechanism is not fully understood, it has been suggested that it causes fibrosis in the lesion in a non-inflammatory manner with a sclerosing effect on vascular endothelium [11,12]. Most of the studies reveal that the effectiveness of bleomycin is the

most in macrcystic lesions [7,13]. But it has also been shown that after 6th dose of intralesional injection all variants of lymphangioma responded well [14].

The typical complications of intralesional bleomycin treatment are erythema, oedema, pigmentation of the skin, transient hair loss and fever [15,16]. It has been reported that these non-serious complications occurred in 25-63% of patients treated with intralesional bleomycin injection [3,16-22]. Induration and oedema may be life threatening if the lesions are close proximity to the upper airways especially in patients younger than 3 months of age so it has been suggested that children younger than 3 months of age should be admitted to hospital for 48 hours in order to avoid upper airway obstruction [14]. Mortality after injection of bleomycin is not commonly observed but it was reported in 3 cases out of 70 patients in a previous study [23]. Systemic absorption of bleomycin after intraparenchymal injection is another concern in intralesional bleomycin treatment of lymphangiomas and it has been suggested that OK-432 should be the first injection option if systemic absorption of the agent used is a matter [3]. In order to reduce discomfort for the patient postoperatively, it has been suggested that solution of bleomycin should be prepared by addition of lignocaine 2% along with normal saline with a ratio of 1:1 [24].

The primary consideration of bleomycin therapy is the risk of pulmonary toxicity. The risk is dose related and at total doses of below 150 mg or 450U or a single dose exceeding 30 mg/m2 of body surface area given intravenously to oncology patients life threatening toxicity is rare [3,25,26]. Although a definitive link to the bleomycin therapy was not shown, it is reported that the two children treated with intralesional bleomycin sclerotherapy died postoperatively from pulmonary complications [4].

There is no uniformity about the dose of bleomycin in the reported series. Doses of 0.3-1.8 IU/kg has been suggested [4,16,19,27-29]. These injections are given at 2-week-2 months intervals and cumulative amount of injected bleomycin is up to 15 IU/kg or 50 mg in total or 5 mg/kg [5,7,28].

Conclusion

In conclusion, lymphangioma is a rare but an important clinical entity. Bleomycin sclerotherapy is an effective treatment modality for the management of lymphangiomas and it should be first line modality before surgical treatment. Ease of treatment, early intervention and good response makes it favorable treatment choice. Accurate management of these children with bleomycin sclerotherapy is recommended. The health providers dealing with such kinds of patients should keep this treatment option in mind and a prompt pediatric surgical consultation is recommended and the patient should be treated accordingly.

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Conflict of Interest

No conflict of interest.

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