

Topical Timolol for pyogenic granuloma in a child: A case report and literature review

Blanca Del Pozzo-Magaña¹, Irene Lara-Corrales^{1*}

¹ The Hospital for Sick Children, University of Toronto, Canada

Abstract

Recently, literature has suggested that Timolol gel 0.5% is a safe and effective treatment for pyogenic granuloma (PG) in children. We present the case of a 3 year-old girl with a PG in the left medial canthus, which was treated with Timolol and resolved after 6 months with no evidence of scarring.

Citation: Del Pozzo-Magaña B, Lara-Corrales I (2014) Topical Timolol for pyogenic granuloma in a child: A case report and literature review. *Adv Pediatr Res* 1:5. doi:10.12715/apr.2014.1.5

Received: October 29, 2014; **Accepted:** December 22, 2014; **Published:** December 31, 2014

Copyright: © 2014 Del Pozzo-Magaña et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Competing interests: The authors have declared that no competing interests exist.

* Email: irene.lara-corrales@sickkids.ca

Introduction

Pyogenic granuloma (PG), also known as lobular capillary hemangioma, is a benign vascular tumor commonly seen in children and adults [1]. Although spontaneous resolutions may occur, treatment is often recommended to avoid ulceration and recurrent bleeding [2]. Several treatment options include surgical removal, curettage and cauterization, laser and topical Imiquimod; however, these treatments have been associated with pain, scarring and local side effects, which can represent a challenge when dealing with pediatric patients [2]. Recently, several reports have suggested that topical Timolol gel 0.5% offers a non-surgical option to treat PG with promising results [3-6]. Herein, we report an interesting case of a child with a PG presenting in a challenging location that was successfully treated with topical Timolol.

Case Report

A 3 year-old girl presented to our clinic with two-month history of a “small red lump” on the left medial canthus. The mother stated that the lesion

started as a little “scratch” and increased in size over the following couple of weeks. The patient was asymptomatic and had not presented any bleeding. On examination, there was a 2-3 mm reddish pink spherical papule on the left medial canthus (Fig. 1).



Figure 1. Pyogenic granuloma on the left medial canthus before treatment with topical Timolol gel 0.5%

History and clinical features suggested a PG. Different treatment options including surgery and cauterization were discussed with the mother but due to the location of the lesion and the age of the patient, a decision was made to treat the patient with topical Timolol gel 0.5%, one drop twice daily before pursuing any other treatment option. The patient was followed up six weeks later, and the lesion presented significant improvement, so the Timolol was continued. During the following months, the lesion continued to decrease in size with no evidence of bleeding. The patient was seen six months later and the lesion had resolved completely leaving only a minuscule skin tag behind (Fig. 2). Medication was stopped and she has not since presented any recurrence. Parents reported no evidence of side effects with the treatment and they did not observe any appreciable scarring. A permission from the child's parents to publish this case report was obtained.



Figure 2. Skin tag remaining after 6 months of treatment with Timolol topical gel 0.5%

Discussion

Pyogenic granuloma or lobular capillary hemangioma is a benign vascular tumor that commonly affects the skin and mucous membranes. It is usually seen in children younger than 5 years-old but older children and adults are also affected [1]. This condition

usually presents as a single, asymptomatic, red to bluish papule or nodule that grows rapidly and usually involves fingers, lips, oral mucosa and perianal area [7]. These lesions are also associated with varying degrees of bleeding that are difficult to control and commonly require emergency room visits.

Although spontaneous resolution of PG can be observed within 6 to 18 months, it usually persists if not treated [1]. Surgical removal is considered the most common management option for PG, associated with reduced recurrence rate, however it is associated with a higher frequency of scarring and varying degrees of pain [2]. Because of the age group in which PG are more commonly seen, sedation or general anesthesia are often required to remove PG. Other treatment options that present varying degrees of success include curettage and cauterization, laser therapy, cryotherapy, CO₂ laser, pulsed dye laser, sclerotherapy, and topical Imiquimod [8]. Recently, some reports of the treatment of PG with topical Timolol gel 0.5% have shown promising results [3,4,6] (Table 1).

Timolol is a non-selective β -adrenergic receptor antagonist that has been successfully used for the treatment of hemangiomas of infancy [9]. Its mechanism of action on vascular tumors is not completely understood, but it is believed that its effect on the blood vessels (vasoconstriction) leads to inhibition of vascular growth factor and promotes cellular apoptosis [9]. The time of resolution of PG with topical Timolol gel 0.5% twice daily varies from one to six months [6]. Timolol gel 0.5% has been proven to be a safe alternative in children that is not associated with systemic side effects, and its application is pain-free and lesions resolve with no scarring [10]. All of these characteristics make this treatment a very attractive option for small children with PG who tend to become very anxious during surgical and/or painful procedures and also for parents since no anesthesia or sedation is warranted to treat their children.

Table 1. Case reports of children with pyogenic granuloma treated successfully with topical Timolol

Reference	N	Age	Treatment duration	Outcome	Side effects	Recurrence
Wine L, 2014 USA [6]	6	2-8y	6wks - 6mo	4 patients: Complete resolution after 2-4 mo 2 patients: * partial response after 2mo	No	Not reported
Khorsand K, 2014 USA [3]	1	5mo	4 wks	Complete resolution	No	No recurrence after 8 mo.
Malik M, 2014 USA [4]	1	14y	3 wks	Complete resolution	No	No recurrence after 7 mo
Present case	1	3y	6mo	Partial resolution at 6 wks. Complete resolution at 6 mo.	No	No recurrence after 3 mo

* One of the patients requested change of therapy due to slow response

Conclusions

We observed a complete resolution in a relatively short period without any side effects. This case and previous reports suggest that topical Timolol gel 0.5% might be a safe and effective treatment of PG presenting in small children or located in areas where surgical treatment is complicated and has a higher risk of scarring. This is further supported by the experience that has already been observed in the treatment of other vascular lesions, such as infantile hemangiomas [9]. However, given the lack of high quality evidence supporting this treatment there is an urgent need for more studies in this area.

References

1. Hoeger P. Differential diagnosis of skin nodules and cyst. In: Irvine A, Hoeger P, Jan A, editors. *Harper's Textbook of Pediatric Dermatology*. Third ed. 2011. p. 92.7-92.8.
2. Gilmore A, Kelsberg G, Safranek S. Clinical inquiries. What's the best treatment for pyogenic granuloma? *J Fam Pract*. 2010;59:40-2.
3. Khorsand K, Maier M, Brandling-Bennett HA. Pyogenic granuloma in a 5-month-old treated with topical Timolol. *Pediatr Dermatol*. 2014 Mar 6. doi: 10.1111/pde.12297
4. Malik M, Murphy R. A pyogenic granuloma treated with topical timolol. *Br J Dermatol* 2014;171:1537-8.
5. Millsop JW, Trinh N, Winterfield L, Berrios R, Hutchens KA, Tung R. Resolution of recalcitrant pyogenic granuloma with laser, corticosteroid, and timolol therapy. *Dermatol Online J*. 2014;20:doi_21726. Retrieved from: <http://escholarship.org/uc/item/43q5g62w>
6. Wine LL, Goff KL, Lam JM, Low DW, Yan AC, Castelo-Soccio L. Treatment of pediatric pyogenic granulomas using beta-adrenergic receptor antagonists. *Pediatr Dermatol*. 2014;31:203-7.
7. Murthy SC, Nagaraj A. Pyogenic granuloma. *Indian Pediatr*. 2012;49:855.
8. Musumeci ML, Lacarrubba F, Anfuso R, Li CM, Micali G. Two pediatric cases of pyogenic granuloma treated with imiquimod 5% cream: combined clinical and dermatoscopic evaluation and review of the literature. *G Ital Dermatol Venereol*. 2013;148:147-52.
9. Weissenstein A, Straeter A, Villalon G, Bittmann S. Topical timolol for small infantile hemangioma: a new therapy option. *Turk J Pediatr*. 2012;54:156-8.
10. Chakkittakandiyil A, Phillips R, Frieden IJ, Siegfried E, Lara-Corrales I, Lam J, et al. Timolol maleate 0.5% or 0.1% gel-forming solution for infantile hemangiomas: a retrospective, multicenter, cohort study. *Pediatr Dermatol* 2012;29:28-31.