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## REVIEW ARTICLE

# IMPROVED OUTCOME IN PROPRANOLOL RESISTANT INFANTILE HEMANGIOMA (PRIH) WITH INTRALESIONAL CORTICOSTEROID: A CASE REPORT

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**ABSTRACT**

Infantile hemangiomas (IHs), the most common vascular tumor of infancy, occur in about 10% of infants. Most lesions proliferate and then involute without any complications. Most common reported complication is ulceration occurring in16% of IHs. Currently, modalities like oral propranolol, provided better therapeutic options and side effect profile as compare to systemic corticosteroids. Few cases of propranolol resistant IH have been reported in which adjunctive modalities like topical timolol or intralesional corticosteroids can be tried.



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## INTRODUCTION

A 4-month-old infant presented to us with a 65-mm × 60-mm left supra gluteal superficial protuberant IH with crusting on the surface (Fig. 1). It appeared at birth as reddish patch growing steadily over time and then gradually developed ulceration at the central part of tumor over the last 6 weeks. MRI was done to rule out occult deeper connections with spinal cord. Propranolol had been initiated at the daily dose of 1 mg/kg in two divided doses and increased to 2 mg/kg on day 7 for 1 month. Topical and systemic antibiotics were instituted. After responding initially to propranolol, IH get stabilized so the dose was increased to 3 mg/kg/day. But it no longer responded to 3 mg/kg/day for next one month as no significant changes in size or color were observed. Blood pressure, heart rate and random blood sugar were monitored bi-weekly. We gave intralesional corticosteroids as adjunctive therapy in this propranolol resistant IH (PRIH) patient.

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Intralesional triamcinolone at a dose of 2 mg/kg/treatment session at monthly intervals for three months was given by a 22-gauge needle directly into the IH. Significant reduction in volume, consistency and color was seen after 3 doses (Fig. 2) and no therapy was further given. No significant changes were seen in morning serum cortisol, adrenocorticotropic hormone (ACTH), serum glucose, serum electrolytes and blood pressure done at each session. Patient was advised regular monthly follow up.

## DISCUSSION

Infantile hemangiomas (IHs), the most common benign tumor of infancy, occur in about 10% of infants, this prevalence rate can reach 22% in premature babies (Emir *et al*., 2015). They have a distinctive life cycle, characterized by a proliferative phase in early infancy followed by, after 12-18 months, an involutional phase, leading to complete and spontaneous regression in many patients. Though the incidence of spontaneous resolution is very high, the results are quite unpredictable, incomplete and may take several years to achieve, causing tremendous anxiety to the parents.

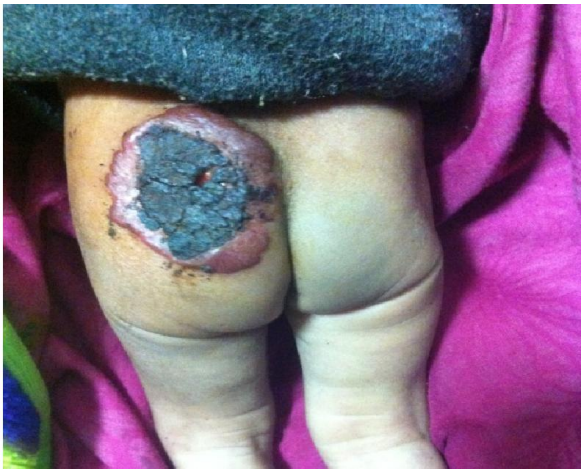

**Fig.1. Ulcerated infantile hemagioma over supra-gluteal region**

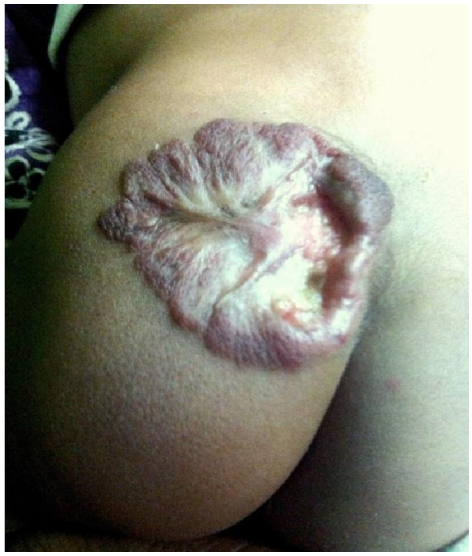

**Fig. 2. Response to monthly interval three doses of intralesional corticosteroids.**

Approximately 70% of hemangiomas regress completely by the age of 7 (Chiller *et al*., 2002). Hence, various modalities have been tried from time to time to enhance spontaneous regression. Therapy is indicated for life-threatening or functional complications (obstruction of airway or vision, or oral, nasal, auditory orifices; bleeding), permanent disfigurement, ulceration, minimizing psychosocial stress and avoiding potentially scarring surgery (Frieden *et al*., 1997). The most common complication of IH is ulceration, occurring in up to 16% of patients. It was defined as a breach in the integrity of the skin overlying the hemangioma lasting ≥ 1 week (Caussé *et al*., 2013). It is more common in larger, segmental hemagiomas and in those located on the lip, neck and anogenital regions. It usually presents as crusting that appears on the surface of the tumor as seen in our patient. Therapy for complicated IHs is divided into pharmacological treatment, surgery, and laser. Excision is reserved for small localized IH, whereas pulsed-dye laser may accelerate healing in superficial ulcerated IH. The most commonly used therapy for hemangiomas was systemic corticosteroids until recent years.

The systemic use of steroids is not ideal as this therapy requires careful monitoring of the child's growth, metabolic status and exposure to infectious agents. Currently, propranolol has been shown to inhibit vascular proliferation of capillary hemangioma. Recommended dose of oral propranolol is 1-3 mg/kg divided BID or TID. Although it is highly effective against complicated IHs, still resistance to this therapy has been reported (0.9%) and termed as Propranolol Resistant Infantile Hemangioma (PRIH) (Caussé *et al*., 2013). PRIH was defined as the absence of the expected therapeutic response to propranolol, i.e. continued IH growth during the proliferation stage or no IH decrease during the post-proliferative stage, after at least 4 weeks of oral propranolol at ≥ 2 mg $kg^{-1}$ daily (Caussé *et al*., 2013). In PRIH, adjunctive modalities that can be used are systemic/intralesional corticosteroids or topical β-blocker like timolol. Timolol preparation has shown result in localized, small ulcerated IH only.

So keeping in view of systemic adverse effects related to oral corticosteroids and the size of ulcerated IH, we preferred intralesional corticosteroids therapy. Local steroid injection for treatment of hemangiomas was first described by Kushner in 1982 and has been used because of fewer side effects compared with systemic corticosteroids (Kushner, 1982). Doses should not exceed a maximum of 3-5 mg/kg triamcinolone acetonide per treatment session (to a maximum of 20 mg). Several treatments, spaced at monthly intervals, may be necessary, but response rates as high as 85% have been reported (Chen *et al*., 2000). None of the reported adverse reactions like anaphylaxis, bleeding, infection, and adrenal suppression was seen in our patient except cutaneous atropy over regressed IH. Risk of super added infection in ulcerated IH should be monitored by topical/oral antibiotics. Pain, which is often a major feature of ulcerated IH, should be managed by oral acetoaminophen with or without codeine, or topical lidocaine.

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