

# Intralesional dexamethasone in treatment of hemangioma: analysis of outcome

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## Introduction

Hemangioma is the most common benign neoplasm of infancy. They occurs in 10% of the children with female preponderance and usually become apparent within a few weeks after birth.<sup>1</sup> Approximately 10% of Hemangioma cause serious tissue damage and about 1% is truly life threatening.<sup>2</sup> There is considerable controversy regarding management of hemangioma. Active treatment is, as a rule, unnecessary. But in some instances, the rapid proliferation may cause severe cosmetic disfigurement, or may even endanger life. According to American Academy of Dermatology, the major goals of management of hemangioma includes :prevention of life threatening complication, prevention of disfigurement after involution, avoidance of potential scarring, minimizing psychological distress, and minimizing infection and pain.<sup>3</sup> For more than four decades, corticosteroids have been the standard therapy worldwide for treatment of serious and life threatening hemangioma. Several researchers have reported successful management by systemic corticosteroids, with potentially serious side effects.<sup>4,5</sup> At first, Mazola reported in detail about Intralesional corticosteroid injection for hemangioma treatment. Later on, many investigators reported satisfactory result with Intralesional steroid injection. Different steroids were used by different researchers i.e. injection Triamcenolone (without dilution), diluted injection Triamcenolone, combination of Triamcenolone and Dexamethasone<sup>1-6</sup> etc.

**Table I** Parameters used for grading the responses of IH to treatment

Excellent-Near total disappearance (more than 75% of pre-treatment size) and color change from pretreatment state to color of surrounding normal skin (or near to normal skin color) of the patient.
Good - 50% to 75% regression in size with color change from pretreatment state to code 3 (any one or in combination of grey and sandy brown) of figure 1.
Poor – 25% to 50% regression in size with color change from pretreatment state to color code 2 (any one or in combination of dull purple and pink bow) of figure 1.
No – No reduction in size or <25% regression in size with no color change.

Data about the use of long acting corticosteroids - injection Dexamethasone for treatment of IH in vivo is lacking. But Hassen & co-worker's<sup>3</sup> studies showed that both Prednisolone and Dexamethasone cause inhibition of neovessel growth in IH tissue in vitro. In Bangladesh, randomized clinical trials and evidence based studies on the efficacy of newer modalities of treatment is still lacking. Keeping these facts in mind and getting idea from Hasan & co-worker's study, this study was done to find out a cheap and effective modality of treatment with minimum side effects for treatment of IH. We analysed the effectiveness and complications of intralesional injection of Dexamethasone.<sup>7</sup> We have treated 220 patients of IH with Intralesional injection of Dexamethasone and its effect was evaluated.

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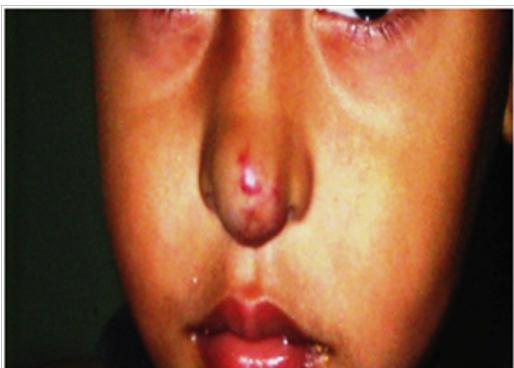
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## Materials and methods

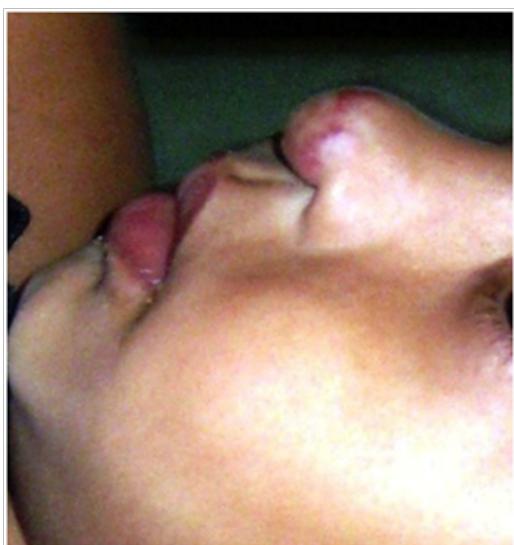
This prospective study concerns the treatment of IH by intralesional Dexamethasone injection with patients between the ages of 2 month to 12 years. Two hundred and twenty patients treated by the author in Chittagong Medical College Hospital from April 2010 to March 2014 and followed up for 12 months after stopping treatment. Patients were divided into two groups: infant (two to twelve months) and children (two to twelve years). Data was collected from interviews, examinations, medical records, photographs and telephone conversations. We use intralesional Dexamethasone injection, at a dose of 2 mg/kg body weight in single coetaneous IH with a size of not more than 5cm in longitudinal diameter of the lesion. Injections were repeated at four weeks interval. Patients with per orbital hemangioma and multiple hemangiomas were excluded. Indications for treatment were rapidly proliferating lesions (147 cases), lesions causing feeding problem (23 cases), repeated bleeding (21 cases), and for cosmetic purpose (29 cases). The injection was given by 26 gauge needle slowly over three to five minutes directly into the lesion in four directions (dividing the lesion in four quadrants by two imaginary lines perpendicular to each other) through the same needle puncture site. Direct pressure was applied with sterile gauge for two to five minutes until all bleeding had stopped. If no response with three successive injections, treatment was stopped and patients were considered as non-responder. In case of responders, injection Dexamethasone was continued at four weeks interval and continued till response of hemangioma persists.

Response to the treatment was analyzed by grading scale of (Table 1). All patients were followed up at 4 weeks interval. In each visit, we monitored size of the lesion and its color change to evaluate the response of hemangioma to treatment. The color changes were monitored by color code of 3 Figures (Figures 1-3). Besides that, assessment was also made for any complication and side effect. At every follow up photograph of the lesion was taken and it was compared to previous photographs. When size of the lesion and its color remain constant in two successive follow up, it was considered

as lack of response to treatment and intralesional Dexamethasone was discontinued.



**Figure 1** After treatment atero-posterior view.



**Figure 2** After treatment lateral view.



**Figure 3** Pre treatment state.

Three color codes used to monitor the response of hemangioma to treatment.

Crimson Red or Red Code 1	Dull Purple or Pink bow Code 2	Grey or Sandy Brown Code 3

## Results and discussion

Among 220 patients there were 128 (ni) infant and 92(nc) children; and 52 (23.6 %) male and 168 (76.4%) female. Range of duration of treatment was 4-24 weeks. After starting treatment, 170 patients (77.3%) responded to treatment though there was no further proliferation of IH in non-responder group. Graded responses according to age group were shown in (Table 2). Therapeutic responses according to anatomical site were shown in (Table 3) highest response was found in head & neck region. During treatment period, some side effects were noted in 41 (18.6%) patients. Ulceration at the injection site was the commonest side effects. However, none of the side effects was persistent. Observed side effects during treatment period were shown in (Table 4). Infantile Hemangioma is one of the most misdiagnosed and maltreated clinical problems in Bangladesh.<sup>7</sup> Numerous reports regarding successful treatment of hemangioma by direct Intralesional steroids have appeared in the literature. Satisfactory results and few complications encourage this application for treating hemangioma.<sup>2,4,8</sup> In this study, we found that number of female patient were greater and male to female ratio was 1:3.23 like many other centers. In 220 patients of IH, we found that the most common age group was infant (58.2%). This data correlates with the study of Aziz khan.<sup>9</sup> In our study total 77.3% patient responded (excellent =34.6 %, good = 30.4% and poor = 12.3%) to Dexamethasone. Gangopadhyay et al.,<sup>4</sup> reported excellent result in 75% patient with intralesional Triamcinolone.

It is reported that various factors affect this treatment. The research results done by Gangopadhyay AN et al. on 105 patients found that the patients under the age of 1 year yield more successful results, which is consistent with the present study (Table 2). It can be seen that the treatment for patients that are under the age of 1 year yield more successful results than the older patients. 85.2% infant responded to this treatment (excellent =40.6 %, good = 30.5% and poor = 14.1%). Additionally, the results from the present study show that the side effects from this treatment's application are minimal.

Metry DW et al.,<sup>10</sup> has suggested that intralesional steroid injections would only yield good results when treating hemangioma having a size of 3 centimeters or less; however, from the research done by the Chantharatanapiboon it was found that the IH having a size larger than 6 centimeters, yielded excellent results at 85.2%. In this study, IH up to the size of 5 cm were included and response was noted in 77.3% patient.

Sloan GM<sup>11</sup> suggested that injections of corticosteroid into tumors should be considered for lesions located on the nasal tip, cheek, lip, or eyelid. The research done by Gangopadhyay AN et al. showed that the treatment of facial hemangioma with intralesional steroid yielded the best results. Whereas the present study found that head & neck hemangioma responded highest (86.82%) to intralesional Dexamethasone (Table 3).

In this study, ulceration at injection site was noted as commonest side effect and it was found in 29 (13.2%) patient and these entire patients were treated by application of local antiseptic ointment; but 7 patient needed systemic antibiotic. Hypo pigmentation was noted in 4 patients (Table 4); of which 2 lesions were in trunk, 1 in scalp and another one was in lower limb. In 16 patients after Intralesional injection there was prolonged bleeding >5 mins. But within 7 mins bleeding was stopped and no other maneuver other than compression by sterile gauge was needed. In no patient systemic side effects were noted.

**Table 2** Grading of responses to treatment between the two age groups

Age Group	Responses				Total No of Patients Who Responded (%)
	Excellent (%)	Good (%)	Poor (%)	No (%)	
Infant (ni=128)	52 (40.6)	39(30.5)	18(14.1)	19(14.8)	109(85.2)
Children (nc=92)	24 (26.1)	28 (30.4)	9 (9.8)	31(33.7)	61(66.3)
Total (n=220)	76 (34.6)	67 (30.4)	27 (12.3)	50 (22.7)	170 (77.3)

**Table 3** Therapeutic responses according to different anatomical site (n=220)

Anatomical Site	Responses		Total
	Yes (%)	No (%)	
Head & neck region	112 (86.82)	17 (13.18)	129
Upper limb	23 (63.9)	13 (36.11)	36
Lower limb	9 (42.9)	12 (57.14)	21
Trunk	18 (78.26)	5 (21.74)	23
Perineum	8 (72.7)	3 (27.3)	11
Total	170 (77.3)	50 (22.7)	220

**Table 4** Side effects noted during treatment with IL Dexamethasone

Age Groups	No Side Effects (%)	Ulceration At Injection Site (%)	Hypo-Pigmentation (%)	Prolonged Bleeding (>5 Mins) From Injection Site (%)	Total No of Patients With Side Effect (%)
Infant (ni=128)	104	14	1	9	24 (18.75)
Children (nc=92)	67	15	3	7	25 (27.17)
Total	171 (77.7)	29 (13.2)	4 (1.8)	16 (7.3)	49 (22.3)

## Conclusion

The authors conclude that intralesional injection of Dexamethasone is effective and safe for treatment of infantile hemangioma. To get optimum response they should be used in patients below one year of age. IH of head- neck region responded best to this therapy. Another advantage of this Intralesional Dexamethasone is that unlike systemic steroid it is free from major side effects.

## Acknowledgments

None.

## Conflicts of interest

Authors declare that there is no conflict of interest.

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