

Clinical Outcome of Intralesional Corticosteroid Therapy in Management of Cutaneous Hemangiomas in Children

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Abstract

Introduction: Hemangioma are benign neoplasms of the vasculature of infants and children and are classified into two major types, (tumors and vascular malformations). These lesions, often referred to as infantile hemangiomas (IH), are considered to be the most common tumors of infancy.

Objectives: To evaluate the efficacy of intralesional triamcinolone in enhancing regression in infantile cutaneous hemangiomas.

Materials and Methods: In this clinical trial all patients' age, sex, presence of any complications, site and size of lesion and the percentage of regression after steroid injection were evaluated. The patients were treated with local injection of diluted triamcinolone (40 mg) with 5 ml normal saline in a dose of 3-5 mg/kg. The injection was given every 4-6 weeks. The number of injections varied from two to six. Parameters used for grading the responses of IH after treatment are excellent response, Good response, Poor response, No response.

Results: Out of 162 patients 88(54.32%) were less than 1 year of age among them 60(68.18%) showed excellent response. Female patient was 119(73.46%) among them 74(57.98%) showed excellent response. Maximum 85(52.47%) haemangioma was strawberry type and showed better response. Majority 66(40.74%) had facial presentation among them 41(62.12%) showed excellent response. Maximum 110(67.90%) haemangioma was < 3cms in size and response better than other type. Maximum 68(41.98%) was rapidly growing type tumour and 27(16.67) was bleeding type hemangioma showed better response.

Conclusion: Intralesional injection of triamcinolone is a safe and effective treatment of hemangiomas. Better response found in female child with size less than 3 cms, rapidly growing tumour, and in strawberry type of hemangioma.

Key-words: Hemangioma, Triamcinolone, Intralesional injection, Children.

Introduction

Hemangioma are benign neoplasms of the vasculature of infants and children and are classified into two major types, tumors and vascular malformations¹. These lesions, often referred to as infantile hemangiomas (IH), are considered to be the most common tumors of infancy^{1,2}. Infantile hemangiomas are characterized by a growth phase and an involution phase³. The true incidence of infantile hemangiomas is unknown⁴. Although they are classically said to occur in up to 10 percent of Caucasian infants⁵, 4 to 5 percent is probably a better estimate⁶. Infantile hemangiomas are generally noticed within the first few days to months of life⁷. Infantile hemangiomas may be cutaneous or extra cutaneous. Frequency of

cutaneous hemangiomas⁸ at particular sites is, Head and neck-60%, Trunk -25%, Extremities -15%.

There is a marked predominance of females, a tendency for higher rates in light skinned infants and a high incidence in premature babies, particularly those with a birth weight of less than 1,500 grams⁹. Hemangiomas may be classified clinically as superficial or strawberry type, deep or cavernous and mixed or combined. Superficial hemangiomas are situated in the superficial dermis, while deep hemangiomas are in the reticular and/or subcutaneous dermis and the combined form has both a superficial and a deep component. Around 30-50% of newborn infants presents with a precursory mark at birth¹⁰.

Although the majority of cases require only stringent follow-up, specific treatment is necessary in 15% of patients in order to minimize future complications. Diagnosis of hemangiomas is based on clinical history and clinical examination in 95% of cases¹⁰. Its pathogenesis has yet to be fully clarified; however, studies suggest a dysregulation in vascular homeostasis due to an error in development occurring in the first trimester of pregnancy¹¹. Infantile hemangiomas characteristically exhibit early rapid growth followed by slow involution. Rapid growth during the neonatal period (birth to 4 wk) is the historical hallmark of hemangiomas. The hemangioma becomes elevated and dome shaped, lobulated, plaque like, tumoral, or any combination of these morphologies. The most growth occurs during the first 4-6 months of life. Proliferation slows considerably between 6-12 months of life. Complete involution in 50% of infantile hemangiomas by age 5 years and 70% by age 7 years. Complete involution may take an additional 3-5 years in the remainder^{7,12}.

Most cutaneous hemangiomas are managed with clinical examination and education of the family¹³. Education of the family should include information about the natural course, potential complications, treatment indications and risks and benefits. Parents, who are usually extremely anxious about the hemangioma, are often satisfied to know simply that "It is a birthmark, it doesn't hurt, and it will get better"¹¹. The hemangioma sizes were classified into small (> 0-3 cm), medium (> 3-6 cm) and large (> 6-9 cm)¹⁴. In addition, intervention may be indicated for very large rapidly growing cutaneous hemangiomas, lesions associated with other complications such as ulceration and/or bleeding, increased risk of scarring or disfigurement, these include lesions complicated by ulceration, lesions of the nose, lip ear, large, segmental hemangiomas of the face and pedunculated hemangiomas¹⁵.

There are different modalities for management of infantile hemangiomas. Systemic corticosteroids were the preferred treatment in severe cases until recently. Their principal effect is to stop the growth and induce regression of the lesion, possibly by

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inhibiting angiogenesis and inducing apoptosis. Steroids must be used with caution secondary to the risk of systemic side effects, such as growth disturbance and immune suppression. Since systemic steroids have potentially serious side effects, intralesional corticosteroid injection has been recommended by certain authors because of reported rapid onset of action and associated safety¹⁶. Local steroid therapy is an option of treatment to avoid the side effects and complications of systemic steroid. The current study was conducted to evaluate the efficacy and safety of intralesional triamcinolone injection in the treatment of cutaneous hemangioma.

Material and Methods

The retrospective study was done on 162 pediatric patients with hemangiomas treated with intralesional triamcinolone injection at age 1 month to 6 years, at CMH Dhaka, from March 2006 to November 2016. Data were collected from interviews, examinations, medical records. Detailed history was taken concerning age at presentation, age at which the hemangioma or hemangioma like lesion was first noted, age at which the lesion started to proliferate, number of hemangiomas, whether any imaging studies, biopsies, or other prior evaluations have been performed and previous treatment and response. The clinical examination was done for each patient. In all cases, the diagnosis of the hemangioma was established clinically based on the history and physical examination. Patients with neck hemangioma have been sent for ultrasonography of the lesion to exclude any other possible differential diagnosis like cystic hygroma. Indications for the treatment were rapidly growing lesions, bleeding, ulceration cosmetic concern and parents anxiety.

The patients were treated by intralesional steroid injection. The injection [Diluted triamcinolone (40 mg) with 5 ml normal saline in a dose of 1-2mg/kg of body weight (maximum 40 mg)] done under local anesthesia. The injection was given every 4 – 6 weeks. Most patients were followed up at monthly interval at least 3 months through clinic visits. Parameters used for grading the responses of IH after treatment. Excellent response; near total disappearance (more than 75% of pre-treatment size), Good response; 50% to 75% regression in size, Poor response; 25% to 50% regression in size, No response; no reduction in size or <25% regression in size. Lesions <3 cm in diameter were classified as small, those between 3 and 5 cm as medium and those >5 cm as large. The number of injections varied from two to six injections. At each visit, besides detailed examination of the hemangioma, assessment was also made for growth delay or any other side effect of the treatment. The criteria for the cessation of the injection treatment included development of complications or lack of response to the treatment.

Results

Out of 162 patients, 88(54.32%) were less than 1 year of age among them 60(68.18%) showed excellent response. Female patient was 119(73.46%) among them 74(57.98%) showed excellent response. Maximum 85(52.47%) haemangioma was strawberry type and showed better response. Majority 66(40.74%) had facial presentation among them 41(62.12%) showed excellent response. Maximum 110(67.90%) haemangioma was < 3cm in size and response better than other type. Maximum 68(41.98%) was rapidly growing type tumour and 27(16.67) was bleeding type hemangioma showed better response (Table-I).

Table-I: Response of hemangiomas (%) with intralesional Triamcinolone by age, sex, type, site, size and indication (n=162)

Characteristics		Total Patients	Response to Triamcinolone			
			Excellent	Good	Poor	No response
Age in year	<1	88(54.32)	60(68.18)	20(22.72)	-	8(9.09)
	>1-3	47(29.01)	23(48.93)	15(31.91)	-	9(19.14)
	>3 -6	27(16.66)	13(48.14)	7(25.92)	3(11.11)	4(14.81)
Sex	Female	119(73.46)	74(57.98)	32(23.52)	1(.84)	12(10.08)
	Male	43(26.54)	22(51.16)	10(23.25)	2(4.65)	9(20.93)
Type	Strawberry	85(52.47)	56(65.88)	28(32.94)	-	1(1.17)
	Cavernous	48(29.63)	30(62.5)	10(20.83)	2(4.16)	6(12.5)
	Mixed	29(17.90)	10(34.48)	4(13.79)	1(3.44)	14(48.27)
Site	Face	66(40.74)	41(62.12)	18(27.27)		7(10.60)
	Trunk	46(28.40)	28(60.86)	13(28.26)	1(2.17)	4(8.69)
	Upper Extremity	28(17.28)	16(57.14)	7(25)	1(3.57)	4(14.28)
	Lower Extremity	22(13.58)	11(50)	4(18.18)	1(4.54)	6(27.27)
Size in cm	< 3	110(67.90)	72(65.45)	28(25.45)		10(9.09)
	>3-5	30(18.52)	15(50)	8(26.66)	2(6.66)	5(16.66)
	>5-7	22(13.58)	9(40.90)	6(27.27)	1(4.54)	6(27.27)
Indication	Rapidly growing lesion	68(41.98)	42(61.76)	21(30.88)		5(7.35)
	Interference with function or movement	11(6.79)	6(54.54)	4(66.66)		1(16.66)
	Bleeding	27(16.67)	18(66.66)	6(22.22)	1(3.70)	2(7.40)
	Cosmetic concern	26(16.05)	15(57.69)	5(19.23)	1(3.84)	5(19.23)
	Ulceration	14	7(50)	4(28.57)		3(21.42)
	Parental anxiety	16	8(50)	2(12.5)	1(6.25)	5(31.25)

Percentage in parenthesis.

Discussion

Conservative management of infantile hemangioma has been advocated in the past. Though the incidence of spontaneous resolution in cutaneous hemangioma is very high, the results are quite unpredictable, incomplete and may take several years to achieve, causing tremendous anxiety to the parents. Hence, various modalities have been tried from time to time to enhance spontaneous regression¹⁶. Several authors reported successful treatment of hemangiomas with intralesional steroid therapy. Gangopadhyay et al. reported that overall response rate was 88.6% with administration of intralesional triamcinolone and no side effects occurred¹³. 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 corticosteroids¹².

The incidence was highest below 1 year 54.32% of age and better excellent response in this group was 68.12%. There were 73.45% females and 26.54% males with a female to male ratio of 2.76:1. Response was also better in female 57.98%. In study of Gangopadyay AN et al¹³ patients less than 1 year of age showed better response. Female to male ratio was 1.5 to 1. In the study of Chowdhury TA et al¹⁷ the most common age group was infant 58.2% and better response 40.6% in this age group. But in the study of Ahm AH et al¹² children between 1-2 years showed better response of injection¹⁶. In another study, a total of 122 cases were analyzed, 60.7% of which were female (74/122) and 39.3% male (48/122), constituting a female/male ratio of 1.5 to 1.

Maximum haemangioma was strawberry type 52.46% and excellent response is more 65.88% in this type and facial presentation maximum 40.72% and excellent response in this type is better 62.12%. In the study of Gangopadyay AN et al¹³ strawberry type of hemangioma was 48.57% response also better 58.8%. Facial presentation was more 40% and better response 64.3% in case of facial hemangioma. This study report is more or less similar to our study. Maximum haemangioma 67.90% presents with < 3cms in size and response 65.45% better than other type of hemangioma, maximum indication for injection was rapidly growing tumour 41.97% and response better in case of bleeding hemangioma 66.66%. Intralesional triamcinolone may be beneficial for small <3 cm in diameter, localized hemangiomas and for ulceration¹⁸. Metry DW et al¹⁹ 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 W¹⁴ it was found that the IH having a size larger than 6 centimeters, yielded excellent results at 85.2%. Chowdhury TA et al¹⁷ IH up to the size of 5 cm were included and response was noted in 77.3% patient.

Conclusion

This study concludes that intralesional steroid injection is a safe and effective treatment and better response found in female child under 1 year of age with size less than 3 cm, rapidly growing tumour and in strawberry type of hemangioma.

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