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Surgical Intervention in Treatment of Infantile Haemangioma

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ABSTRACT

Background: Infantile Haemangioma (IH)has long been considered as an angiogenic disease because of the tangled disorganized mass of blood vessels in the tumor. This study aimed to prove the safety and efficacy of medical treatment prior to surgical intervention in management of haemangioma.

Patients and methods: This study was involved patients with infantile haemangioma disfiguring or complaining who admitted to Zagazig University Hospitals. All patients presented to vascular surgery department were subjected to medical treatment with beta blockers and followed up every 2 months for 6 months for possibility of surgical intervention.

Results: The current study included patients with infantile haemangioma disfiguring or complaining, their mean age was 2.95±1.57. Male patients represent 54.2% and female represent 45.8% of studied group. The majority of outcome were excellent (29.2%), very good (8.3%), good (37.5%) and bad (16.7%). Bleeding reported at 4 cases with 16.7% ulceration and infection 8.3%. Medical management was in 66.7% and surgical in 33.3% and combined were in 29.2%. There was significant decrease at all time from pre to 6 month. The association between basic demographic and hemangiomas characters and type of management were significantly associated with surgical. Surgical management significantly associated with bleeding, and associated with ulceration and infection but not significantly.

Conclusion: Propranolol may be more effective and safer in treatment of infantile hemangiomas (IH) and may also be used as a first-line therapy than previously established therapies, and may be an alternative when more widely accepted treatments for IH have failed. Surgical procedures can keep back for complicated IH in which conservative medical therapy is ineffective or contraindicated.

Keywords: Surgical Intervention; Infantile Haemangioma; Sclerotherapy

INTRODUCTION

Infantile hemangioma (IH) is the most common tumor of infancy. It is diagnosed in approximately 2–10% of infants. Diagnosis is primarily based on history and well-documented clinical features of suspected lesions**(1)**. Most IH are benign and uncomplicated. However, as high as 10% will have complications including bleeding, ulceration, functional impairment and permanent disfigurement**(2)**. Propranolol inducing regression of IHs. Larger controlled studies to demonstrate propranolol's effectiveness and pharmacological safety are underway**(3)**.

Surgical procedures are generally reserved for complicated IH in which conservative medical therapy is ineffective, not tolerated or contraindicated.

Additionally, surgery is considered in patients with acute complications. Finally surgery may be considered when there are likely to be significant functional or cosmetic deficits despite medical therapy or when these deficits might be more severe with the prolonged treatment time frame associated with medical options**(4)**.In contrast, treatment of residual deformities during the involutedly phase is easily justified because pharmacologic treatment isnot effective anymore**(5)**.

This study aimed to prove the safety and efficacy of medical treatment prior to surgical intervention in management of haemangioma. To detect best time of surgical intervention and the outcome and efficacy of each option as regard size of haemangioma, safety, cosmetic appearance and complications of procedure.

PATIENTS & METHODS

This prospective clinical trial study included patients with infantile haemangioma disfiguring or complaining who admitted to Zagazig University Hospitals. Written informed consents were obtained from all patients.

Inclusion and exclusion criteria:

Patients with infantile haemangioma disfiguring or complaining in age upto 10years old. While, patients with other congenital anomalies or cardiac disease in age olderthan10yearsoldand patients submitted to previous treated patients were excluded.

All patients subjected to full history taking, general and local examination. Duplex ultrasound to confirm diagnosis and to detect if it is high or low flow. Routine laboratory investigations were performed.

Technique:

All patients presented to vascularsurgery department were subjected to medical treatment with beta blockers and followed up every 2 months for 6 months for possibility of surgical intervention.

I. Medical treatment involved propranolol in a dose of 1mg/kg/dayfor1week, then increased to 2-3 mg/kg/day.

II. Treatment by duplex guided Injection sclerotherapy. The end point was successful reduction in size or complete obliteration of vascular channels. Polidocanol was used in concentration of 1-3% according to the size and depth of vascular channels.

III. Surgery may be needed as a final stage. Surgical excision for complicated cases who resistant to medical treatment are subjected to surgical excision under general anaesthia and after consultation of the parents.

Follow up evaluation:

The studied patients were followed up for 6months using duplex ultrasound assessment for evaluating size, shape and presence of complications.

Statistical analysis:

Data analyzed using Microsoft Excel software& Statistical Package for the Social Sciences (SPSS version 20.0). Data qualitative represent as number and percentage, quantitative continues group represent by mean ± SD, the following tests were used to test differences for significance; difference and association of qualitative variable by Chisquare test (X2). Differences between quantitative independent

groups, paired by pairedt. P value was set at<0.05 for significant results &<0.001 for high significant result.

RESULTS

The current study included patients with infantile haemangioma disfiguring or complaining, their mean age was 2.95±1.57 **(Figure 1)**. Male patients represent54.2%andfemalerepresent45.8%of studied group **(Figure 2)**. The majority of outcome were excellent (29.2%), very good (8.3%), good(37.5%) and bad(16.7%)**(Table 1)**.

Concerning complications, bleeding reported at 4cases with 16.7% ulceration and infection 8.3% **(Figure 3)**. Medical management was in66.7%andsurgicalin33.3% and combined were in 29.2% **(Table 2)**.There was significant decrease at all time from pre to 6 month **(Figure 4)**. The association between basic demographic and hemangiomas characters and type of management were significantly associated with surgical**(Figure 5)**.Surgical management significantly associated with bleeding, and associated with ulceration and infection but not significantly**(Table 3)**.

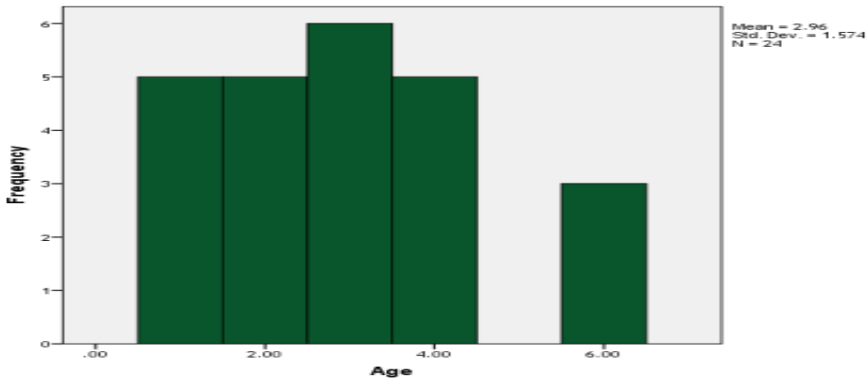

Figure (1): Age distribution among studied group (N=24)

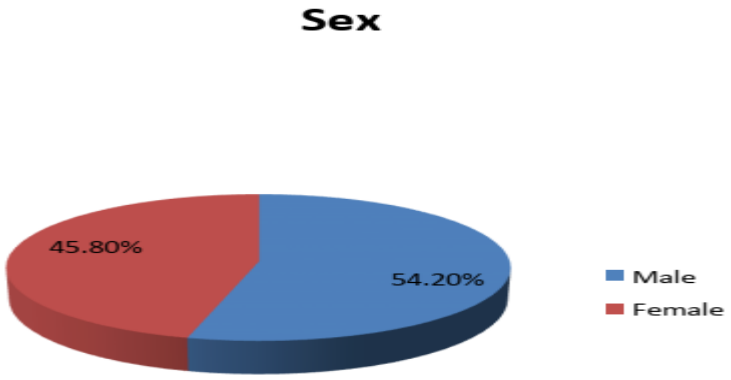

Figure (2): Sex distribution among studied group (N=24)

Table (1): Outcome distribution among studied group (N=24)

		N	%
Outcome	Bad	4	16.7
	Fair	2	8.3
	Good	9	37.5
	Verygood	2	8.3
	Excellent	7	29.2
	Total	24	100.0

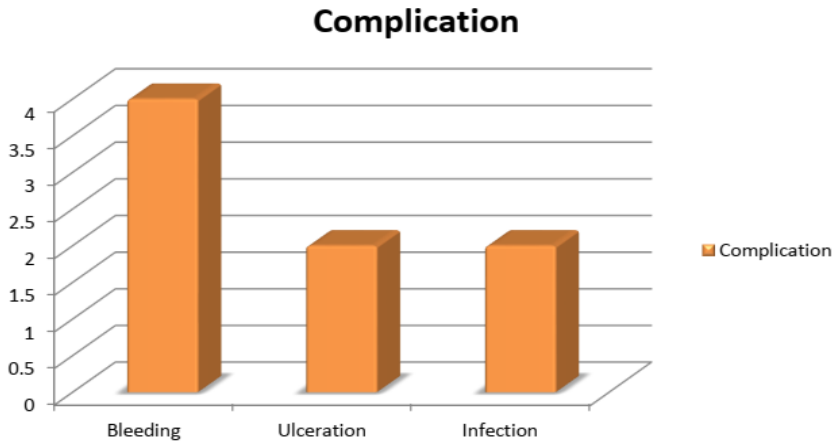

Figure (3): Complication distribution among studied group

Table (2): Management distribution among studied group

		N	%
Management	Medical	16	66.7
	Surgical	8	33.3
	Excision	6	25.0
	Injection	2	8.3
	Combined	7	29.2
	Total	24	100.0

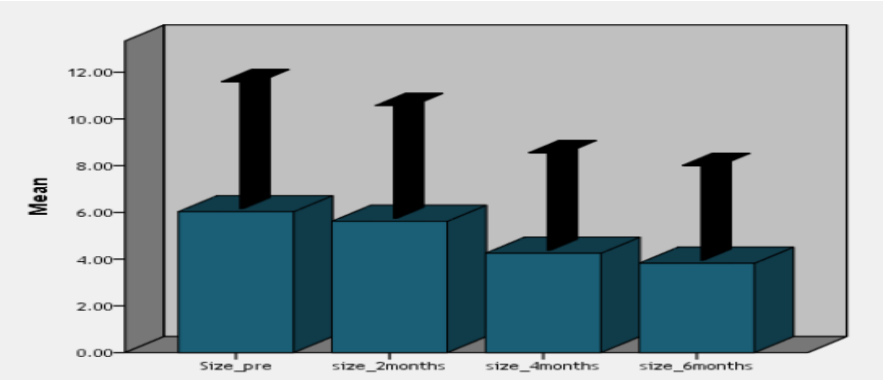

Figure (4): Size of Hemangioma distribution at pre and follow up times

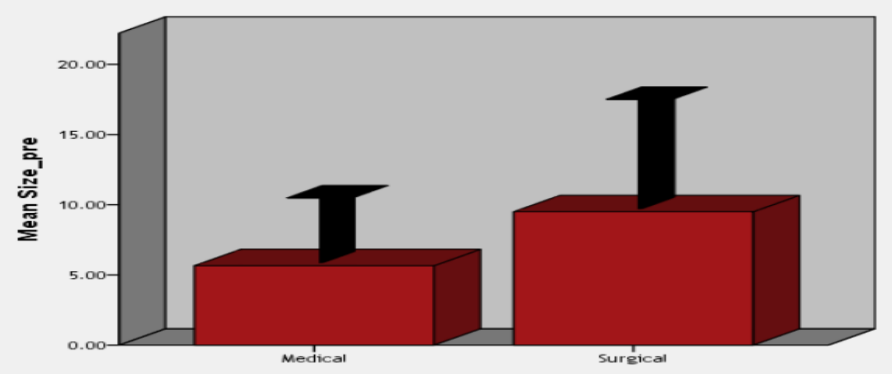

Figure (5): Association between basic demographic and hemangiomas characters and type of management

Table (3): Association between complication and type of management

			Management		X^2	P
			Medical	Medical		
Bleeding	No	N	16	4		
		%	100.0%	50.0%		
	Yes	N	0	4	7.8	0.002*
		%	0.0%	50.0%		
Ulceration	No	N	16	6		
		%	100.0%	75.0%		
	Yes	N	0	2	2.14	0.112
		%	0.0%	25.0%		
Infection	No	N	16	6		
		%	100.0%	75.0%		
	Yes	N	0	2	2.14	0.112
		%	0.0%	25.0%		
Total		N	16	8		
		%	100.0%	100.0%		

DISCUSSION

Infantile hemangioma (IH) is a vascular tumor that occurs in 5–10% of infants of European descent. A defining feature of infantile hemangioma is the dramatic growth and evelopment into a disorganized mass of blood vessels. Subsequently, a slow spontaneous involution begins around1 year of age and continues for 4–6 years. The growth and involution of infantile hemangioma is very different from other vascular tumors and vascular malformations, which do not regress and can occur at any time during childhood or adult life**(6,7)**.

A minority of IH may develop function-threatening or life-threatening complications including ulceration; most common IH complication, occurring in 16% of patients; risk factors include larger lesions, segmental IH, and distribution in the head, neck, perioral, and perineal or perianal locations**(5)**.

The present study included 24 Childs with with infantile haemangioma disfiguring or complaining who admitted to Zagazig University Hospitals. The purpose of this study to prove the safety and efficacy of medical treatment prior to

surgical intervention in management of haemangioma.

Our study revealed the mean age of the studied patients was 2.95 years old and most of patients were males. While, a study by **Kridin et al. (8)** the mean age at the initiation was estimated at 11.25 (SD, 2.24) months, whereas the median age was 10 (range919)months. Out of the 28eligible patients, 20(71.4%) were females, and 8 (28.6%) were males. The reisno algorithm to determine the most appropriate modality and timing of intervention for a given IH**(4)**.

Our study showed the majority of outcomes were excellent (29.2%), very good (8.3%), good (37.5%) and bad (16.7%). The indications for intervention for IH include: emergency treatment of complications, urgent treatment of existing or functional impairment. Evaluation to identify important structural anomalies potentially associated with IH. Elective treatment to reduce the likelihood of long-term or permanent disfigurement**(9).**

Accepted treatments include intra-lesional and system iccortico steroids, chemotherapy (vincristine and interferon alpha), liquid nitrogen cryotherapy, laser ablation and surgical excision. Corticosteroids are currently the preferred therapy for most types of IH**(10)**.

The use of propranolol in the treatment of IH reported by LabreÌze following an incidental finding. Propranolol therapy was further investigated in a twenty patient randomized controltrial**(4)**. Propranolol may limit the need for surgery in IH. In a multicenter study comparing propranololtocorticosteroidtreatmentforIH,12%of children treated with propranolol required surgery, whereas 29% of those treated with steroids required surgery**(11)**.

Surgery still serves a role in IH that are refractory to treatment or that needurgenttreatment.Inpatientswithanincompleteresponsetopropranolol, medical therapy may limit the extent of surgery necessary for an easy and cosmetically acceptable excision(LeboulangerNetal.,2011).

Also, **Daramola et al.(12)** reported 36 patients had a total of 36 lesions treated with adjunctive therapy pre-operatively or post-operatively. Adjunctive therapy included oral steroid administration(8.6%),intra-lesional steroid injection(10.8%), lasertherapy(20%), sclerosing agent injection (one patient) and oral propranolol (one patient).That study was performed looking at patients from 2005 to 2007 before a wider use of propanolol was initiated for IH therapy in the study location. Head and neck lesions were more likely to require multiple modality treatment. The most common location receiving adjunctive therapy was the lip, which was treated in 11 patients (11/94 lesions). Patients undergoing surgical resection alone to those who received adjunctive therapy in addition to surgery.

In our study, bleeding was reported in 4 cases with 16.7% then ulcerationandinfection8.3% each. **Daramola et al.(12)** found the overall complication rate was 17%. The post-operative complications and outcome reported in that study were limited to presence of a hypertrophic scar, cellulitis, wound dehiscence and alopecia. Since there is no extensive post-operative complication data published, and some reports do not include lesions of the head and neck, it is difficult to interpret this rate for comparison purpose. In reality, a majority of complicated facial IH cases involved a second elective procedure for the purposes of scar revision and may overestimate the true complication rate. Size at the time of surgery, clinical phase of lesion and volume were not found to be significant predictors of complications in his study.

Another study included 245 patients with a total of 299IH. A total of 48 patients

were observed, 9 patients were administered steroids, 27 patients under went surgical excision, 88 patients were treated with laser therapy, and 73 received combined therapy consisting of laser treatment excision and steroids. They reported a high rate of excellent results based on volume reduction, improvements in color and skin texture for the group undergoing surgical excision. It should be noted that no subgroup analysis was reported for the group receiving combined modality treatment**(13)**.

CONCLUSION

Propranolol may be more effective and safer in treatment of infantile hemangiomas (IH) and may also be used as a first-line therapy than previously established therapies, and may be an alternative when more widely accepted treatments for IH have failed. Surgical procedures can keep back for complicated IH in which conservative medical therapy is ineffective or contraindicated.

No conflict of interest.

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