

Original research article**A study of clinical profile of infantile hemangioma in a tertiary care hospital****¹Dr. Venkataramana G, ²Dr. Malle Nagaveni, ³Dr. Bhanu Prakash Goud, ⁴Dr. Srinivas**^{1,4}Assistant Professor, Department of General Surgery, Navodaya Medical College Hospital and Research Centre, Mantralayam Road, Raichur, Karnataka, India²Assistant Professor, Department of Pediatrics, Navodaya Medical College Hospital and Research Centre, Mantralayam Road, Raichur, Karnataka, India³Assistant Professor, Department of Pharmacology, Kurnool Medical College, Kurnool, Andhra Pradesh, India**Corresponding Author:**

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Abstract**Aims and Objectives:** To study the clinical profile of children with Infantile Hemangiomas.**Methods:** This prospective study was conducted in Department of Pediatrics, Navodaya Medical College Hospital and Research Centre, Mantralayam Road, Raichur, Karnataka, India, over a period May 2021 to April 2022. All children with hemangiomas attending in hospital outpatient department during the study period.**Results:** In our study with 30 infants, there was a female predominance with a Female to Male ratio of 2:1. 23.33% were born prematurely with gestational age ranging from 32-34 weeks and birth weight ranging between 1.7-2.2kgs. Most common complications noted were ulceration - 23.33% and proptosis – 6.66%. Head constituted the most common site for hemangiomas followed by the trunk and the extremities. The mean age at therapeutic initiation was 5.27 months and the mean duration of treatment was 9.6months. 74% of hemangiomas showed excellent response, 17% showed Good response, 5.71% showed fair response and 2.85% showed poor response with a propranolol dose of 2-3 mg/kg/day with a mean duration of 9.6months [Range is 5-20months].**Conclusion:** The regression in size of hemangiomas was statistically significant.**Keywords:** Female, hemangiomas, proptosis, prospective study**Introduction**

The majority of infantile tumors, or infantile hemangiomas (IH), are benign vascular proliferations that affect 5–10% of people [1]. Compared to Caucasian children, they are less common in African American and Asian children, and they are more common in females. 2-4 the most frequently affected area is the head and neck (60%), followed by the trunk (25%) and the extremities (15%) [2-4].

Natural history of infantile hemangiomas is predictable [5]. While the majority do not exist at birth, some may have a precursor lesion like a pallid area or vascular patch. Infantile hemangiomas experience rapid growth (proliferative phase) within months of birth, followed by gradual involution that typically lasts for years. The periorbital area, central face, airway, skin folds, and anogenital area are among the sites where haemangiomas are most likely to cause cosmetic and life-threatening complications and necessitate treatment, even though most of them are benign and go away on their own [6]. Problematic hemangiomas can now be treated with a number of pharmaceutical treatments, including beta-blockers, bleomycin, interferon-alpha, vincristine, steroids, and imiquimod [7, 8]. Each of these modalities, though, has a relatively small therapeutic benefit and distinct negative effects.

Using its inhibitory effects on angiogenesis, systemic corticosteroid therapy has long been used as a first-line treatment for infantile hemangiomas. Adverse reactions to steroid therapy, which are common and significant, are a key component. Some of the negative effects include weight gain, obstructive hypertrophic cardiomyopathy, cushingoid facies, high blood pressure, acne, and growth retardation [9]. Because of their numerous drawbacks, variable efficacy, and potential toxicity, other treatment modalities, such as laser ablation, surgical excision, interferon-alpha, and vincristine, are only used as second or third line therapy for IHs [6-8].

Materials and Methods

This prospective study was conducted in Department of Pediatrics, Navodaya Medical College Hospital and Research Centre, Mantralayam Road, Raichur, Karnataka, India, over a period May 2021 to April 2022. All children with hemangiomas attending in hospital outpatient department during the study period.

Inclusion criteria

- Multiple lesions [Lesions greater than one are considered as multiple lesions].
- Single or multiple lesions with complications-Cosmetic / Functional risks (Ulceration, bleeding, Feeding problems, Vision related – Proptosis, Ptosis, Upper airway obstruction).
- Single or multiple lesions with rapid proliferation – defined as doubling in size over one to two weeks.
- Hemangiomas on drug therapies other than propranolol with no improvement.

Exclusion criteria

- History of allergy or hypersensitivity to beta-blockers
- Children with risk factors for beta blocker usage
- Cardiac - Congenital heart disease Sinus Bradycardia
- Congestive heart failure Atrioventricular block

Respiratory

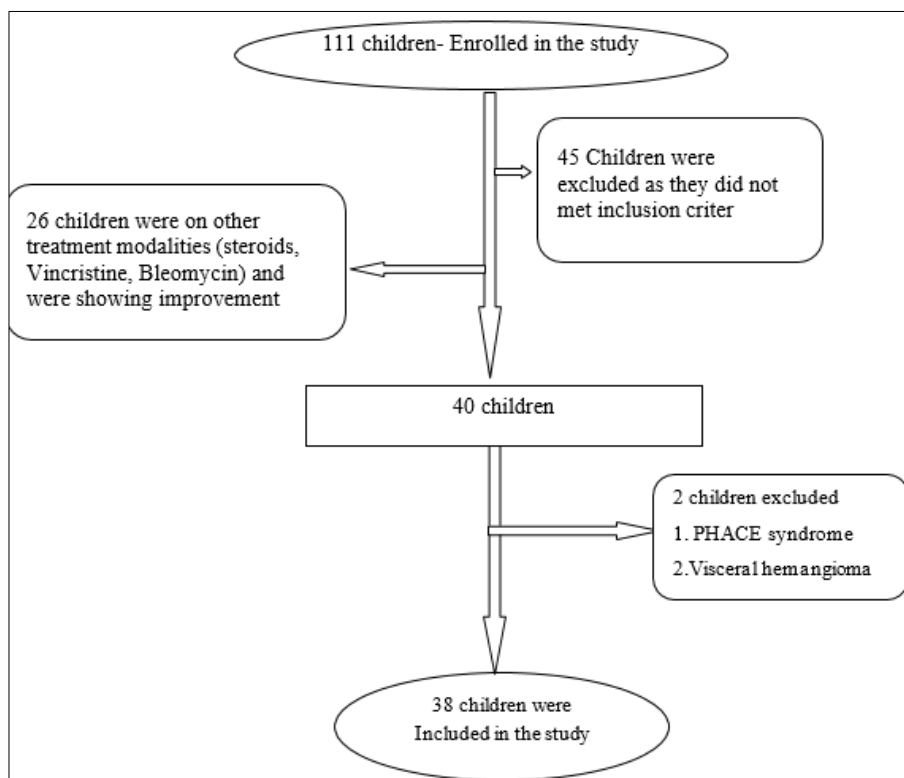
- Past history of wheeze
- Family history of Bronchial Asthma
- Hemangiomas associated with visceral lesion
- Hemangiomas with syndromic associations

Ethics Committee Approval

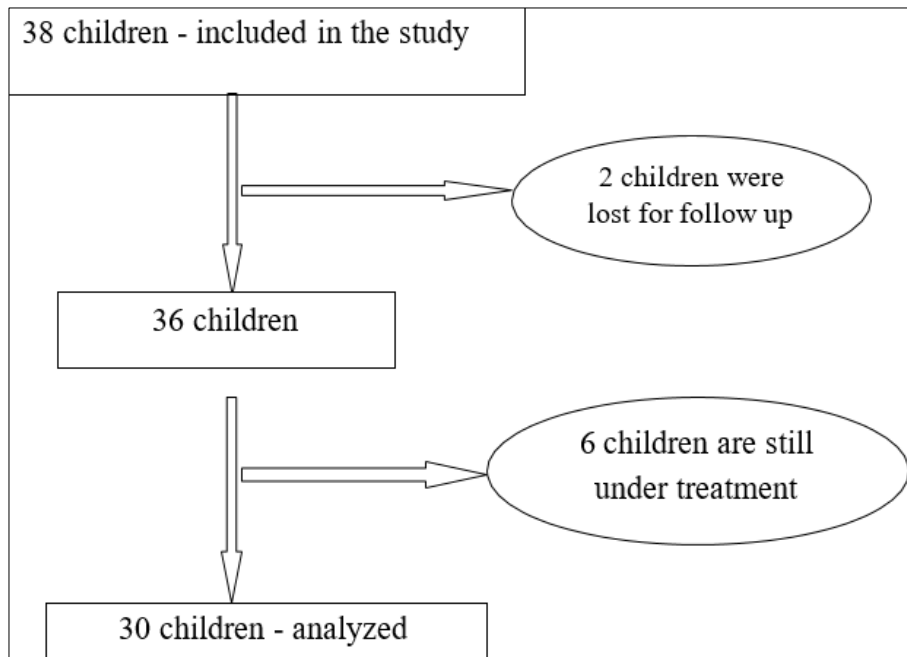
Approval was obtained from the Institutional Research Ethics committee (CTMRF-CHILDS Trust Medical Research foundation) prior to conducting this study.

Results

During the period of study, a total of 111 children with infantile hemangiomas were enrolled. Of them, 45 children were excluded as they did not meet the inclusion criteria. 26 children with hemangiomas were on other treatment modalities (Steroids, bleomycin, vincristine) and were improving. One child with hepatic and splenic hemangiomas, was on vincristine and propranolol and one child with PHACE syndrome was on steroid and propranolol and both were showing improvement.



Among the 111 children with hemangiomas attending outpatient department, a total of 38 children satisfying inclusion criteria were enrolled in the study. 2 children were lost for follow up and 6 are still under treatment. Thus, 30 infants (up to 12months) were included in the study.



1. Age

In our study 30 infants were included. The mean age at therapeutic initiation was 5.27months with a range of 1-12months. Among the 30 infants 21(70%) were under 6months of age and 9(30%) were more than 6months of age. None had contraindications for propranolol therapy.

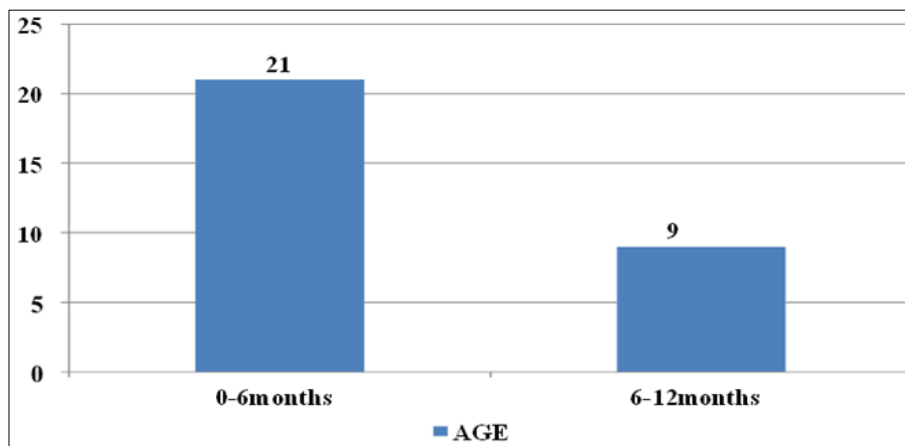


Fig 1: Age

2. Gender distribution

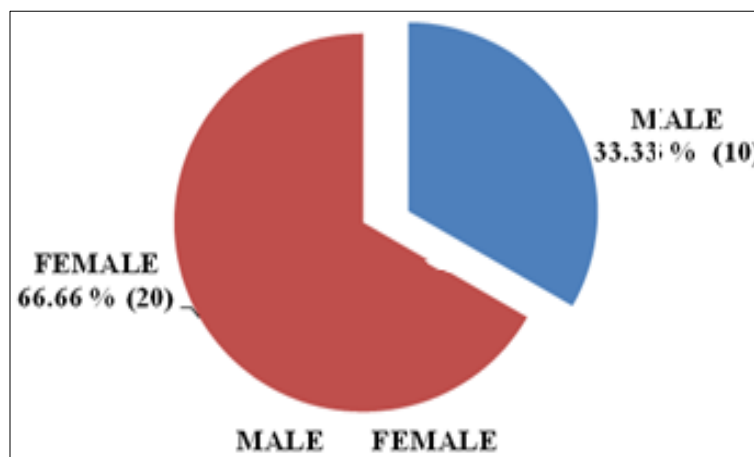


Fig 2: Gender distribution

Among the total 30 children with hemangiomas, 10 (33.33%) were male and 20 (66.66%) were female as shown in the pie diagram with a female to male ratio of 2:1.

3. Age at which hemangiomas were noticed

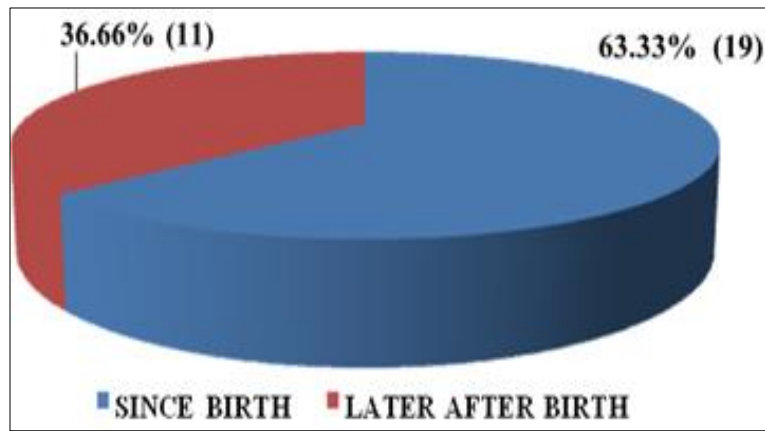


Fig 3: Age at which hemangioma noticed

Among the 30 children, hemangiomas were observed in 19 (63.33%) children at birth and in the other 11(36.66%) children, they were noticed after birth within a period of 7days to 5 months.

4. Number of lesions at presentation

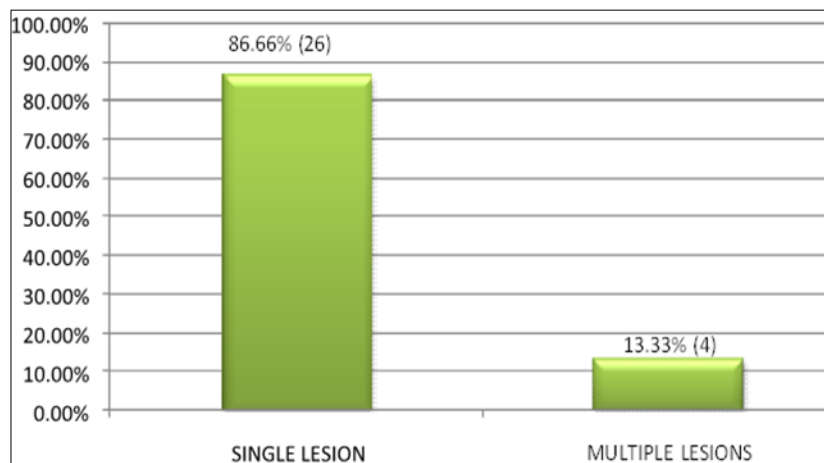


Fig 4: Number of lesions at presentation

Among 30 children, 26 (86.66%) had single lesion and 4 (13.33%) had multiple lesions. Lesions greater than one were considered as multiple lesions. One child had 3 hemangiomas and the remaining 3 children had 2 hemangiomas each

5. Gestational age

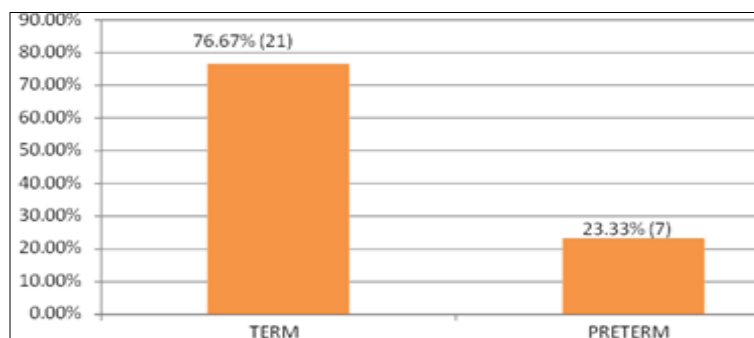


Fig 5: Gestational age

Out of 30 children, 7 (23.33%) were born preterm with gestational age ranging from 34-36 weeks. At the initiation of treatment, they were all older than 40weeks of gestation. The birth weight of these infants was ranging between 1.7-2.2kgs.

6. History of consanguinity

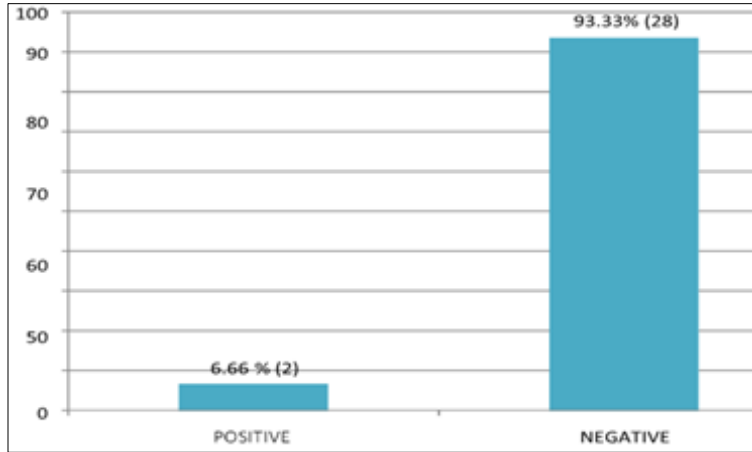


Fig 6: History of consanguinity

Only 2 children (6.66%) were born of consanguineous parents: one out of second degree and one out of third degree consanguineous parents.

7. Family history of hemangioma

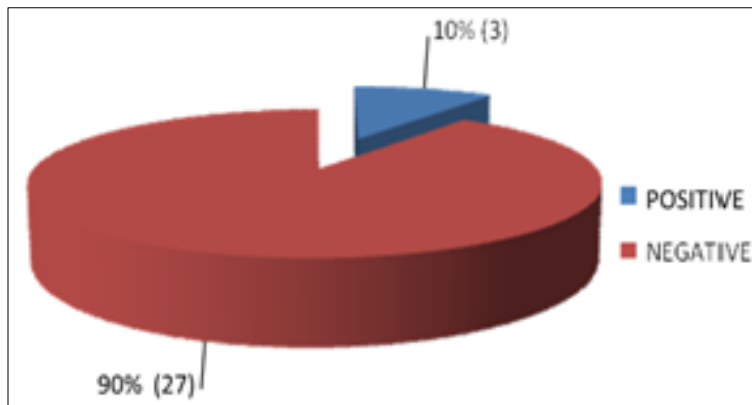


Fig 7: Family history of hemangioma

Out of the 30 children, 3 (10%) had family history of hemangiomas. Among them, one infant had hemangioma in first degree relative and the other 2 had hemangiomas in the second degree relatives.

8. Previous treatment

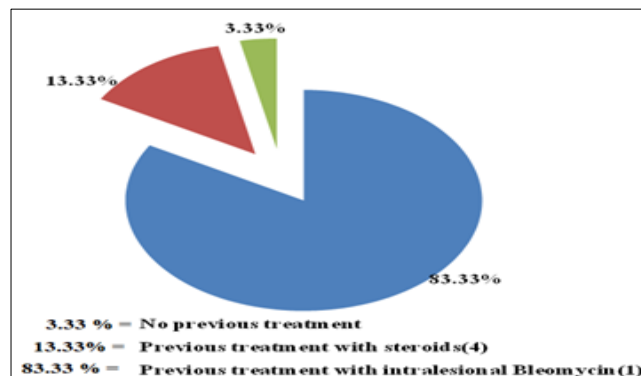


Fig 8: Previous treatment

Among 30 children, 5 (16.66%) had previously received corticosteroid (4) and intralesional bleomycin (1) treatment and achieved no response. Corticosteroid treatment was discontinued before the infants were enrolled in the present study.

Table 1: Clinical data at initial presentation

Patient's data	N	Percentage
Total no.	30	100
Gender		
Male	10	33.33
Female	20	66.66
Female/male ratio	2:1	
History of consanguinity		
Positive	2	6.66
Negative	28	93.33
Family history of Hemangioma		
Positive	3	10
Negative	27	90
Number of lesions at Presentation		
Single lesion	26	86.66
Multiple lesion	4	13.33
Age at onset		
Since birth	19	63.33
Later after birth	11	36.66
Previous treatment	5	16.66
Preterm	7	23.33

9. Presenting complaints

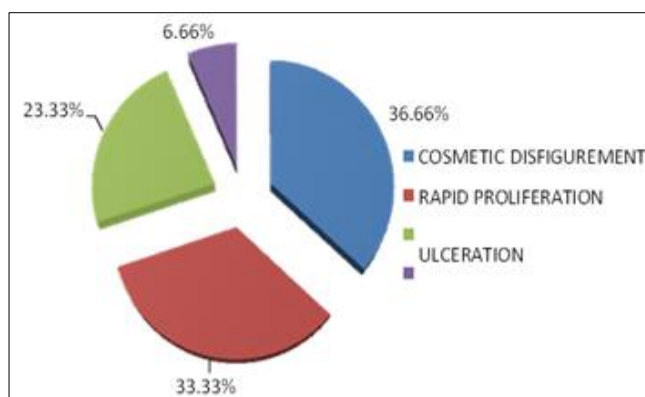


Fig 9: Presenting complaints

Out of 30 children, 11 (36.65%) presented with cosmetic disfigurement, 10 children (33.33%) presented with rapid proliferation, 7 (23.33%) had ulceration and 2 (6.66%) presented with proptosis.

10. Hemangioma’s data at initial presentation

In 30 children, accounting for multiple lesions, a total of 35 hemangiomas were analysed.

Site of hemangioma

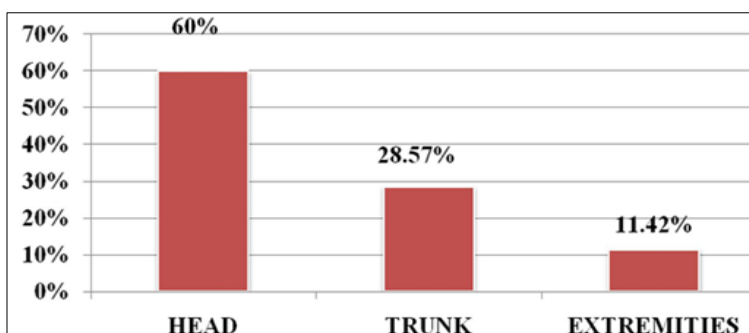


Fig 10: Site of hemangioma

Out of the 35 hemangiomas, 21 (60%) were in the head region, 10(28.57%) were in the trunk region [chest -4(11.4%), abdomen- 6(17.14%)] and 4 (11.4%) were in the extremities [Left- 3, Right-1].

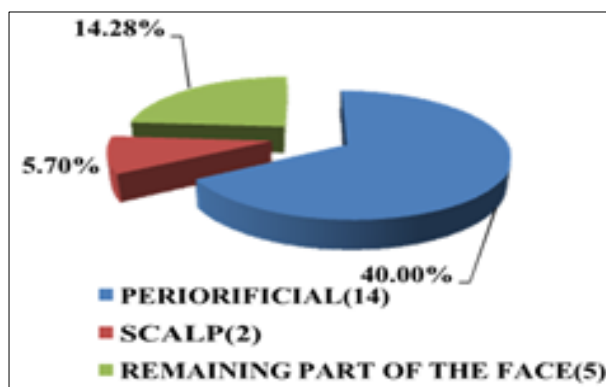


Fig 11: Head regions hemangiomas

In the head region (60%) majority of hemangiomas were in the Periorificial region (40%). The remaining were distributed in the scalp (5.70%) and remaining part of the face (14.28%) [Cheeks-3, temporal region-2].

In the Periorificial region, the hemangiomas were distributed as follows-Periorbital region including eyelids-5(14.28%), labial (lips)-4 (11.4%), nasal -3 (8.57%) and peri auricular region-2 (5.70%).

Table 2: Site of hemangiomas

Hemangioma's data	Number	Percentage
Total no.	35	100
Site of hemangiomas		
Head	21	60.00
Scalp	2	5.7
Face (cheek (3), temporal region(2))	5	14.28
Periorificial	14	40.00
Lips	4	11.42
Periorbital and eyelids	5	14.28
Periauricular area	2	5.70
Nose	3	8.57
Trunk	10	28.57
Chest	4	11.42
Abdomen	6	17.14
Extremities	4	11.42

12. Type of hemangioma

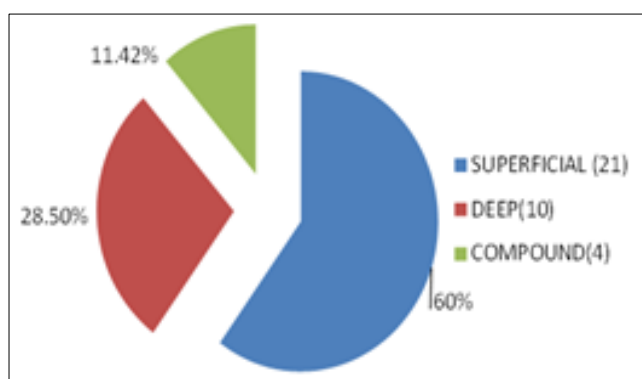


Fig 12: Type of hemangioma

Out of the 35 hemangiomas, majority were superficial hemangiomas (60%), followed by the deep hemangiomas (28.50%) and then the compound hemangiomas (11.42%).

Discussion

The effect of propranolol on infantile hemangiomas was discovered incidentally in 2008 [10]. Since then, some studies and case series were published supporting the efficacy of propranolol in treating infantile

hemangiomas. However, data were variable regarding the regime used, the reported side effects, and the response to therapy. Ours is a study conducted in a tertiary care Paediatric teaching hospital over a period of 2 years where we studied the clinical profile of Infantile Hemangiomas and the impact of propranolol therapy on it. Though many studies similar to ours have been published all over the world, data from India is comparatively sparse.

The prevalence rate of Infantile Hemangioma amongst those attending the outpatient services at our centre was 2.57% (1 in 39 infants). Buckmiller *et al* (USA),^[11] Xiao *et al.* (China),^[12] Talaat *et al.* (Egypt),^[13] McGee *et al* (Northern Ireland),^[14] in their studies reported a prevalence rate of 4-10% of children in the age group of one year. However the earlier observations were community based surveys may not be comparable and our observations not likely to represent the true prevalence amongst all children.

In our study, 30 infants (up to 12months) were included. None had contraindications for propranolol therapy. Their mean age at therapeutic initiation was 5.27 months.

Among the 30 children, hemangiomas were observed in 19 (63.33%) children at birth and in the rest 11(36.66%) children, they were noticed after birth with a range of 7days to 5 months. Similarly in a study by Talaat *et al.*,^[13] with 50 children, hemangiomas were noticed at birth in 56%.

Among the 30 children with hemangiomas, there was female preponderance with a female to male ratio of 2:1, similarly Buckmiller *et al.*^[11] and Xiao *et al.*^[12], in their studies, reported a female preponderance with a female to male ratio of 5.1:1 and 3.9:1 respectively. Though gender ratio has varied greatly between the studies ranging from 1.4:1 to 5:1, all have reported a female predominance^[4, 15].

In our study, out of 30 infants, 7 (23.33%) were born prematurely with gestational age ranging from 34-36 weeks and birthweight ranging between 1.7-2.2kgs. Chung *et al.*^[16] in his study reported a similar observation of 25% of prematurity. In contrast, in a study by Xiao *et al.*^[12] with 64 children done in 2013 reported only 3 (4.7%) subjects to be preterm's. The incidence of hemangiomas is increased among preterm infants, affecting 22% to 30% of infants weighing less than 1 kg^[4, 17]. Multivariate analysis has revealed that low birth weight (LBW) is the major contributor to this risk; there is a 25% increase in risk of developing an IH with every 500gms reduction in birth weight^[18].

In our study out of 30 infants, 3 (10%) had family history of hemangiomas and 2(6.66%) children were born out of consanguineous parents. Talaat *et al* (Egypt)^[13] in his study reported a similar incidence of 6% positive family history; however the consanguinity was reported in 24%.

Out of the 30 children, 26 infants (86.66%) presented with solitary hemangioma and 4 (13.33%) infants presented with multiple lesions. However in a study by Sabbagh,^[19] with 15 children, 5(33.33%) had solitary hemangioma and 10(66.66%) children had multiple lesions. In our study majority were superficial hemangiomas (60%), followed by the deep hemangiomas (28.50%) and then the compound hemangiomas (11.42%). In contrast, in a study by Talaat *et al.*^[13] with 80 children, 83% were compound hemangiomas; superficial and deep hemangiomas were distributed as 7.5% and 8.7% respectively.

The hemangiomas were distributed predominantly in the head region (60%) followed by the trunk (28.57%) and then the extremities (11.4%). In the head region, majority were in the Periorificial region (40%) including periorbital, perioral, nose and periauricular area. The remaining were distributed in the scalp (5.7%) and the remaining part of the face (14.28%) including temporal region and cheeks. Similarly Buckmiller *et al.*^[11] in his study with 41 children, has reported head region (66%) as the most common site, followed by the trunk (8.51%) and the extremities (6.38%). In a study by Xiao *et al.*^[12] with 64 children, 83% of hemangiomas were in the head region, 7.8% were in the trunk region and 9.3% were in the extremities.

The main indication for therapy in our study was cosmetic disfigurement in 11 children (36.65%), rapid proliferation in 10 children (33.33%), ulceration in 7 children (23.33%) and proptosis in 2 children (6.66%). In a study by Haggstrom *et al.*^[20] approximately 24% of children with IH experienced some complication related to their IH in which ulceration accounted for the majority, followed by visual impairment and bleeding. Talaat *et al.*,^[13] in his study reported cosmetic disfigurement (93.75%) as the main indication of therapy followed by the ulceration (2.5%) and visual obstruction (2.5%). Similarly in a study by Haded *et al.*,^[21] the main indication for therapy was significant cosmetic deformity in 19 patients (79.2%), ulceration and recurrent bleeding in 3 patients (12.5%). Buckmiller *et al.*,^[11] reported a similar incidence of ulceration (21.9%) in his study with 41 children and the remaining complications were ptosis and/or visual field obstruction in 15.6% and bleeding in 6.25%.

The mean duration of treatment was 9.6 months with a range of 5- 20months. One child had received propranolol for 20 months due to poor drug compliance and irregular follow up. For the remaining children the range of duration of treatment was 5-14 months. Similarly in a study by Manunza *et al.*^[22] with 30 children with an age range between 1.2 and 13.5 months, the range of treatment was 3.5-15months and in a study by Sans *et al.*^[23] with 32 infants with an age range between 2 and 41 months, the range of treatment was 3-10 months.

Conclusion

From the above studies, finally concluded that the regression in size of hemangiomas was statistically significant.

Funding source

None

Conflict of interest

None

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