

## A Descriptive Study of Neonatal Vascular Skin Lesions in a Tertiary Care Hospital in Pune

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### Abstract

The appearance of the skin can provide clues regarding the health status of the neonate such as gestational age or nutritional status. Being aware of common skin lesions found in the neonatal period will alert us to symptoms of systemic or cutaneous disorders. The main aim and objective of our study was to find the vascular skin lesions in neonates and correlate it with their gender and maturity at time of birth. Our study was conducted on 120 neonates attending the dermatology OPD and neonates admitted in NICU, Pediatric and Postnatal ward of tertiary teaching hospital in Pune. Data was collected and expressed as percentage. We found in our study that Hemangiomas were seen in only 2 female neonates (1.7%), comprising 1 preterm and another full term neonate. In both cases hemangiomas were present over face. A female predominance (3:1) and an increased incidence in premature infants have been documented. We also observed that Port wine stain was seen in 4 neonates (3.3%), 3 preterm and 1 mature neonate. vascular lesions if present at birth should be considered and managed promptly and not just considered it as mere birthmark.

**Keywords:** Hemangiomas, Neonate, Skin Lesion, Vascular Lesion.

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### Introduction

Skin is the first defense organ in human body. Healthy skin is a blessing which many don't have. Some are born with some skin abnormalities and few acquire after their birth or during life. An abnormal change of the skin compared to the surrounding tissue are called as skin lesions. They can vary in terms of severity [benign or severe], location [generalized or localized], symmetrical and irregular. A skin lesion's physical characteristics are

described based on color, size, texture and location. This description can be used to help establish if there is an underlying cause. Skin lesions are broadly classified as primary or secondary skin lesions.

Primary skin lesions are either present since birth or develop during lifetime. These are caused due to some reaction to either external or internal environments. They tend to be divided into three types of groups. The first group include skin

lesions formed by fluid within the skin layers, such as vesicles or pustules. The second group comprises of skin lesions that are solid, palpable masses, such as nodules or tumors. The last group consist of flat, non-palpable skin lesions like patches and macules. Vascular skin lesions more commonly known as birthmarks are relatively common abnormalities of the skin and underlying tissues [1]. The three major categories of vascular lesions are Hemangiomas, Vascular Malformations and Pyogenic Granulomas.

Infantile hemangiomas initiate a rapid growth during the first months of life and later regress spontaneously [2] Hemangiomas can also be life threatening. Children who have facial port wine stains involving skin innervated by V1 and V2 branches of the trigeminal nerve should have a thorough ophthalmologic examination in infancy, because these neonates are at risk for developing Glaucoma or Sturge-Weber syndrome. The main aim and objective of our study was to find the vascular lesions in neonates and correlate it with their gender and maturity at time of birth. We have taken up this study to show that vascular lesions if present at birth should be considered and managed promptly and not just considered it as mere birthmark.

### Materials and Methods

This hospital based, cross sectional, prospective study was conducted on 120 neonates attending the dermatology OPD and neonates admitted in NICU, Pediatric and Postnatal ward of tertiary teaching hospital in Pune after obtaining ethical approval from the institution. Detailed history of neonatal skin lesions regarding onset and duration was taken from parents. A thorough clinical examination of all

neonates along with relevant investigations in selected cases was performed.

### Method of Collection of Data:

All the neonates irrespective of gestational age, sex, vaginal or caesarean section delivery mode were included in the study. Exclusion Criteria include those neonates whose parents were not willing to give consent for relevant investigations of neonates.

**Procedure:** All the 120 neonates were thoroughly examined in day light with accurate definition of morphology of skin lesions and all the observations were recorded. A complete history was noted which included age of the mother, consanguinity, parity, mode of delivery, and history of any maternal illness during pregnancy. The anthropometric parameters which included birth weight, gender of the neonate and age at the time of examination were recorded in each case. Diagnosis of disorder in most of the cases was based on clinical impression. For infectious disorders relevant investigations were carried out.

### Statistical Analysis:

The observations pertaining to parameters under our study among the newborn babies were expressed in percentage.

### Results

In our study among the 120 newborns, 64(53.3%) were male, 56(46.7%) were female, 69 (57.5 %) were born at term, 41 (34.2 %) were preterm, 10 (8.3%) post term. Eighty seven (72.5 %) newborns were delivered by normal vaginal route, thirty three (27.5 %) by Cesarean section. Eighty five women were primipara (70.8%), thirty five were multipara (29.2%).

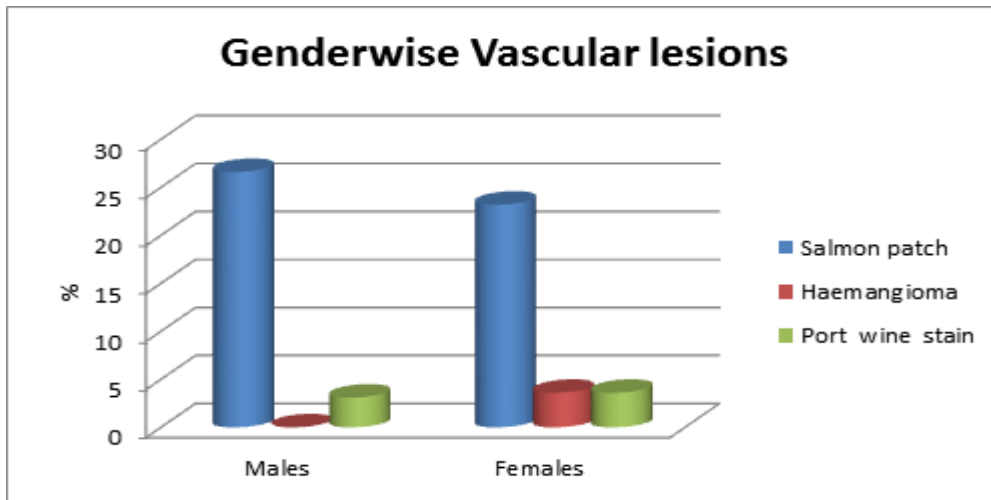
**Table1:-Percentage of vascular skin lesions.**

S. No	Vascular lesions	Number	%
1	Salmon patch	30	25.0
2	Haemangioma	2	01.7
3	Port wine stain	4	03.3
Total		36	30.0

Among vascular lesions, Salmon patch was seen in 30(25%), Port Wine stain 4(3.3%) and Haemangioma 2(1.7%).

**Table2:- Percentage of vascular lesions with correlation to gender.**

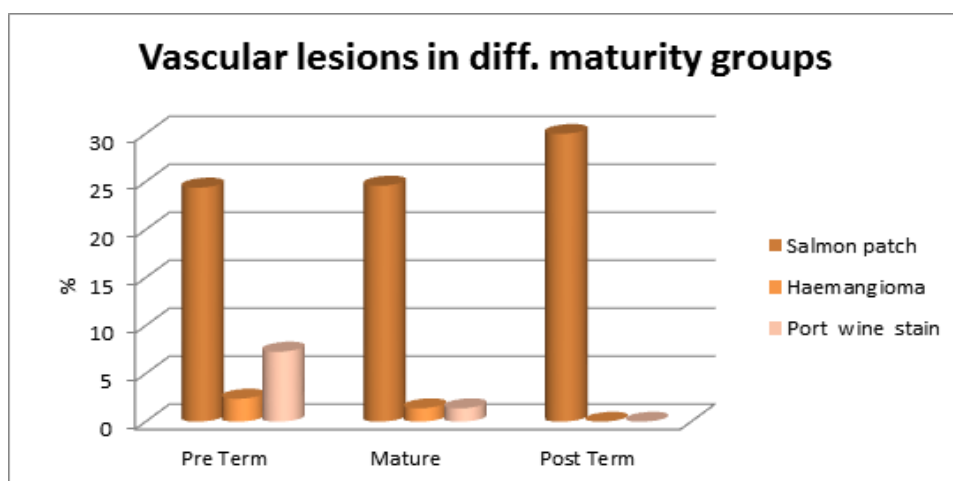
S. No	Vascular lesions	Female (56)	%	Male (64)	%
1	Salmon patch	13	23.2	17	26.6
2	Haemangioma	2	3.6	0	0
3	Port wine stain	2	3.6	2	3.1
	TOTAL	17	30.4	19	29.7



**Graph 1: Percentage of vascular lesions on basis of gender distribution**

**Table 3: Percentage of vascular lesions with correlation to maturity**

S. No	Vascular Lesions	Pre-Term	%	Term	%	Post Term	%
1	Salmon Patch	10	24.4	17	24.6	3	30
2	Haemangioma	1	2.4	1	1.4	0	0
3	Port Wine Stain	3	7.3	1	1.4	0	0
	Total	14	34.1	19	27.5	3	30



**Graph 2: Percentage of vascular lesions with correlation to maturity**

**Discussion**

This study gives priority to the various neonatal lesions encountered in our

institute. It is interesting to note that detailed examination of a single newborn may reveal many dermatological

conditions simultaneously, from being asymptomatic to symptomatic and life threatening like fetal distress which cause unnecessary parental anguish. All these neonatal babies were examined according to proforma.

Hemangiomas are vascular tumors characterized by 2 staged processes of growth and regression. They are the most common soft-tissue tumors of infancy, occurring in approximately 5% to 10% of infants. Although most hemangiomas occur sporadically or as part of pleotropic syndromes, autosomal dominant segregation of hemangiomas can be seen<sup>3</sup>. A female predominance (3:1) and an increased incidence in premature infants have been documented [4].

Approximately 55% of these tumors are present at birth, and remainder develop in the first few weeks of life. Hemangiomas are clinically heterogenous, their appearance is dictated by the depth and location in the skin, as well as stage of evolution. In the newborn, hemangiomas may originate as a pale white macule or a patch with thread like telangiectasia. As the tumor proliferates, it assumes its most recognizable form; bright red, slightly elevated, non-compressible plaque. Hemangiomas that lie deeper in the skin are soft, warm masses with a slightly bluish discoloration. Frequently, hemangiomas have both a superficial and deep component. They range from a few millimeters to several centimeters in diameter and usually are solitary, however up to 20% of infants will have multiple lesions. Generally, superficial hemangiomas have reached their maximum size by 6 to 8 months, but deep hemangiomas may proliferate for 12 to 14 months. Hemangiomas then undergo slow spontaneous resolution, which generally takes 3 to 10 years. Most hemangiomas do not require treatment and will involute spontaneously. [5]

Infantile hemangiomas are the most frequent benign tumors of infancy, with a

prevalence of 4–5%, a clear female predominance which is 2.5 times higher, and increased frequency in Caucasian children [2]. They are more likely to occur in cases of low birth weight and decreasing gestational age. In case of a birth weight less than 1000 g, the prevalence of infantile hemangiomas is as high as 23% [6].

Life threatening hemangiomas are lesions that cause or threaten to cause ocular compromise, respiratory distress, congestive cardiac failure, gastrointestinal bleeding and extensive skin ulceration. The location and size of the lesion and the age of the patient are particularly important in decision making. Hemangiomas in certain anatomic locations such as nose, lip and ear are much more likely to result in permanent disfigurement and scarring.

Early surgery is an option in a minority of case. Systemic corticosteroids have remained mainstay of therapy for patients with large and alarming hemangiomas. The use of interferon  $\alpha$ 2a and 2b must be reserved for alarming hemangiomas, after corticosteroid therapy has failed or if it is not tolerated [7].

Vascular malformations are errors in morphogenesis composed of capillaries, veins, arterioles, lymphatics or combinations of vessels. They are present at birth, generally grow proportionately with the child's development. They may change in size because of trauma, infection or other factors. The ground breaking work of Mulliken and colleagues establishing a biological classification of malformations and hemangiomas has greatly contributed to our understanding of vascular birthmarks [8, 9].

Salmon patch is the most common vascular malformation seen in newborns [10]. In contrast to hemangiomas, they do not have a proliferative phase or a tendency for spontaneous involution.

Transient Macular Stains (Stork Bite, Salmon Patch, Nevus Simplex Or Angel Kiss) is the most common vascular birthmark, seen in 70% of normal newborns [11]. They are usually found on the nape of the neck, the eyelids, the glabellar region of the forehead, and less commonly on the upper lip. Most of the facial lesions fade by 1 year of age but those on the neck are more persistent. The terms “butterfly-shaped mark” or “sacral medial telangiectatic vascular nevi” are often used to describe similar vascular stains located over the midline sacral region on the back [4]. Whereas, some others have reported a lack of associated spinal dysraphism, prospective studies with MRI are lacking, so it is not possible to definitively exclude this risk completely [12, 13].

Port Wine Stains (Nevus Flammeus) are malformations of the superficial capillaries of the skin so more accurate term used is capillary malformation. Capillary malformations are present at birth, they may be only a few millimeters in diameter or may cover extensive areas, occasionally involving up to one half of the body surface area [12]. In infancy, these lesions are pink-red in color, with sharp demarcated macules and patches. With time they darken to a purple or port wine color and may develop a pebbly and slightly thickened surface. Capillary malformations are often dermatomal in distribution. [14] When it is present with a pigmented lesion, like Mongolian spot or nevoid hyperpigmentation or nevus spilus, it is known as phakomatosis pigmentovascularis. [4] Neonates who have facial port wine stains involving skin which is innervated by the V1 and V2 branches of the fifth cranial nerve named trigeminal nerve should undergo a complete ophthalmologic examination during infancy to decrease the risk of developing glaucoma or Sturge-Weber syndrome. Patients with Sturge-Weber syndrome have a port wine stain in a V1 distribution and may also have multi-

dermatomal or extensive cutaneous involvement. Although exact innervation of lower eyelid is controversial (V1 versus V2), it seems likely that involvement of both upper and lower eyelids portends a significantly higher risk of Sturge-Weber syndrome. [10] Currently, the most successful treatment modality is pulsed dye laser.

The prevalence of salmon patch varies in studies conducted in different parts of the world. In our study we found that salmon patch was seen in 30 neonates (25%). It is reported as 22.3% in a Japanese study, 66.28.4% in an Indian study, 65 27.8% in a Taiwanese study, 73 18.78% in a Jewish and 19.97% in Arab neonates [11]. The most common site of occurrence of salmon patch in our present study was nape of neck as seen in 21 neonates (70%). Other sites were glabella 5 (16.7%) and eyelid 4 (13.3%).

Hemangiomas were seen in only 2 female neonates (1.7%), comprising 1 preterm and another full term neonate. In both cases hemangiomas were present over face. We did not find any other lesion in these neonates. A female predominance (3:1) and an increased incidence in premature infants have been documented [2,4].

We also observed that Port wine stain was seen in 4 neonates (3.3%), 3 preterm and 1 mature neonate. None of these 4 cases showed association with Sturge Weber syndrome, naevus spilus, and nevoid hyperpigmentation. All neonates showed lesions over face. They were confined to the ophthalmic and maxillary branch of the trigeminal nerve over face in two cases and mandibular branch in others. However, further investigations were not done for any syndromic association in our neonates.

### Summary and Conclusions

Our hospital based, cross-sectional study on vascular skin lesions in 120 newborns was conducted for a duration of 2 years in a tertiary care hospital. The sex

distribution, birth weight, gestational age, parity, route of delivery and consanguinity in relation to skin lesions were analyzed. We found a definite correlation between some cutaneous lesions and gender as hemangiomas were seen in female neonates.

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