

## A clinical study of pediatric hypomelanotic dermatoses at tertiary care center

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### ABSTRACT

**Background:** Hypopigmentary and depigmentary lesions are frequently encountered in pediatric age group which can be alarming and distressing to parents. They may be insignificant or denote an underlying multisystem disorder. Hence, a thorough medical history, clinical, Wood's lamp examination, and an interdisciplinary consultation may aid in the correct diagnosis of these dermatoses.

**Objectives:** The objectives of the study were to study the various hypopigmentary and depigmentary dermatoses in children attending the outpatient department of a tertiary care center in South India. **Materials and Methods:** A descriptive study was conducted at the outpatient department of dermatology at the tertiary care center of South India, where 121 patients aged between 0 and 18 years presenting with hypopigmentary and depigmentary skin lesions from August 2018 to August 2019 were included in the study irrespective of gender. A detailed history, clinical examination, and basic investigations were done. **Results:** Out of 121 children included in our study, 67 (55.37%) were girls and 54 (44.62%) were boys. The mean age of the study group was 9.8 years. The most common dermatosis observed was pityriasis alba (28.9%), followed by primary disorders of hypopigmentation (vitiligo, lichen striatus, nevus depigmentosus, nevus anemicus, halo nevus, hypomelanosis of Ito, progressive macular hypomelanosis, and blaschkoid dermatitis), post-inflammatory hypopigmentation (19.8%), pityriasis versicolor (8.2%), Hansen's disease (3.3%), and morphea (2.4%). **Conclusion:** The most common hypomelanotic dermatosis noted in the present study was pityriasis alba followed by primary disorders of hypopigmentation and depigmentation. Most of the dermatoses were either self-limiting or benign in nature and required only reassurance and managed with only medical line of management. These diseases may be the reason for undue concern and anxiety in parents; hence, a thorough evaluation and management of these dermatoses are necessary.

**Key words:** Depigmentation, Hypopigmentation, Lichen striatus, Pediatric, Pityriasis alba, Vitiligo

Childhood pigmentary dermatoses are one of the most commonly encountered conditions, of which hypopigmentary and depigmentary dermatoses are important as they are associated with a significant amount of concern in parents [1] as the color denotes sociocultural characteristics of an individual. Abnormal cutaneous pigmentation can be due to alteration in melanin content, abnormal distribution of melanin pigment, reduced hemoglobin content, or deposition of exogenous substances. Hypopigmentation is defined as any form of reduced pigmentation, whereas depigmentation refers to a near-complete absence of pigmentation [2]. Hypopigmentation disorders may be congenital or acquired, localized or diffuse [3,4]. The common childhood hypomelanotic disorders are pityriasis alba, vitiligo, pityriasis versicolor, and post-inflammatory hypopigmentation secondary to certain inflammatory dermatoses [5].

A thorough medical history, clinical examination, and an interdisciplinary consultation may aid in the correct diagnosis of these dermatoses. Wood's lamp, diascopy test, and, in some instances, a histological examination may contribute toward the correct diagnosis and management of these conditions [6]. Pediatric hypomelanotic dermatoses can be the reason for worry

in parents due to the external appearance. These conditions may often pose a diagnostic challenge in treating physicians due to their subtle presentation and heterogeneous [3] etiology. Hence, the present study was carried out to study the various hypopigmentary and depigmentary dermatoses in childhood at a tertiary care center.

### MATERIALS AND METHODS

A descriptive study was conducted at the outpatient department of dermatology of a tertiary center of South India for a period of 1 year from May 2018 to May 2019, where children aged between 0 to 18 years presenting with hypopigmentary and depigmentary lesions were included in the study irrespective of their sex. Patients with a history of topical medicament usage before consultation and whose parents disagreed to offer consent were excluded from the study.

Data including patient's age, gender, site, onset, evolution and morphology of lesions, associated skin and systemic complaints, and family history were noted and thorough clinical examination was done. Clinical photographs were taken for the documentation

after obtaining informed/written consent from the parents. Complete hemogram, Wood’s lamp examination, and diascopy test; KOH mount and biopsy (only if required) were done to make appropriate diagnosis. Data were analyzed using descriptive statistical analysis. The Institutional Ethics Committee approval was taken.

**RESULTS**

A total of 121 patients aged 0–18 years were included in the study, of which 67 (55.37%) were girls and 54 (44.62%) were boys. The majority of the children belonged to the age group of 4–10 years (48.76%) and the mean age was 9.8 years. Age and sex distribution of the study group is given in Table 1. The most common site of involvement was the face (54.54%).

The most common hypopigmentary disorder noted was pityriasis alba, seen in 35 (28.9%) children, followed by primary disorders of hypopigmentation including vitiligo (15.7%), lichen striatus (9.9%), nevus depigmentosus (4.1%) (Fig. 1), nevus anemicus (2.4%), halo nevus (2.4%), hypomelanosis of Ito/pigmentary mosaicism (0.8%), progressive macular hypomelanosis (0.8%), and blaschkoid dermatitis (0.8%). Post-inflammatory hypopigmentation was seen in 24 (19.8%) children, pityriasis versicolor in 10 (8.2%), Hansen’s disease in 4 (3.3%), and morphea in 3 children (2.4%).

Out of 35 children (28.9%) with pityriasis alba, 16 were boys and 19 were girls, the most common age group affected was 2–8 years. The age of onset of symptoms ranged from 0.8 to 15.75 years and the average duration of symptoms was 2.5 months. Nineteen children (15.7%) were diagnosed with vitiligo; of which, non-segmental type was seen in 15 (78.9%) patients and segmental type in 4 (21%) patients (Fig. 2). Focal vitiligo was the most common type noted in 7 patients (36.8%) followed by vitiligo vulgaris in 5 (26.3%) and mucosal in 3 (15.7%) patients. The most common site involved was face in 12 patients (63.15%). The mean age of onset of disease and the average duration of illness was 9.5 years and 2.47 months, respectively.

Out of the 11 children diagnosed with lichen striatus, 2 children (18.18%) gave the history of preceding infection (Fig. 3), as shown in Table 2.

The most common cause of post-inflammatory hypopigmentation was atopic dermatitis, seen in 7 children, followed by hypopigmentation due to varicella infection in 6 (25%), seborrheic dermatitis in 5 (20.8%), intertrigo in 3 (12.5%), and pityriasis rosea, papular urticaria, guttate psoriasis, and tinea incognito, each seen in 1 (4.1%) child. Among four

children diagnosed with Hansen’s disease, two were in borderline tuberculoid (BT) spectrum and two in tuberculoid spectrum (TT) (Fig. 4). The mean age of onset was 10 years and face was the most common site affected.



**Figure 1: Nevus depigmentosus: Depigmented macules over leg since birth**



**Figure 2: Segmental vitiligo: Depigmented macule in segmental pattern involving upper lip**



**Figure 3: Lichen striatus: Hypopigmented papules forming plaques arranged linearly**

**Table 1: Age and sex distribution of the study group**

Age group (years)	Boys	Girls	Mean age (years)
0–5	31	28	2.38
6–10	9	9	8.42
11–14	8	21	12.54
15–18	6	9	16.19
Total	54 (44.62%)	67 (55.37%)	9.88

## DISCUSSION

In the present study, 121 children were included, of which 67 (55.3%) were girls and 54 (44.6%) were boys. Majority of the children were below 5 years (45.45%). Pityriasis alba (28.9%) was the most common dermatosis observed followed by post-inflammatory hypopigmentation (19.8%). These observations were in accordance with the study done by Soni *et al.* [5], where the majority of children belonged to the age group of 0–6 years (41%) and the rest of them were 7–12 (35.67%) years. The onset of lesions at birth was noted in 11% of children with the mean duration of 1.12 years.

The common pediatric hypomelanoses observed in their study were pityriasis alba (27.33%) followed by pityriasis versicolor (21%) and vitiligo (19.33%). In a study done by Sori *et al.* [7],



**Figure 4:** Borderline tuberculoid hansen's: Illdefined hypopigmented patch over left cheek

the most common age group was 6–10 years with the mean age of 7.2 years and the mean age of onset was 7.36 years. In 9.7% of children, lesions were present since birth with the mean duration of 1.64 years. In the study done by Pinto *et al.* [8], the most common disorders of hypopigmentation in children were pityriasis alba, vitiligo, nevus depigmentosus, and tinea versicolor, which were comparable to our study.

In the present study, among children with pityriasis alba, 15 were boys and 20 were girls. The earliest age of onset was 0.8 years and the average duration of symptoms was 2.5 months. A total of 12 (34.28%) patients gave a history of atopy and 5 patients (14.2%) gave a history of preceding illness. Only 2 (5.7%) patients were found to be anemic. Our findings were comparable to the study done by Vinod *et al.* [9] on 200 patients with pityriasis alba. In their study, most of the patients were aged below 15 years, with a male-to-female ratio of 1.35:1. The duration of symptoms ranged from <1 month to >1 year, and majority of the patients (84.5%) had symptoms of <6 months duration. Atopy was noted in 17% of patients, evidence of worm infestation in 45.5%, and microcytic hypochromic anemia in 16.5% of cases.

Among 19 patients with vitiligo, 5 were boys and 14 were girls indicating a female preponderance. This was in concordance to the study conducted by Gupta [10], where 50 pediatric patients with vitiligo were studied; the male-to-female ratio was 1:1.38. In the present study, the earliest age of onset was 3 years, the average duration of illness was 2.47 months, and the most common type of vitiligo noted was non-segmental type in 15 patients (78.9%). There was no association with hypothyroidism in any of the patients in our study.

The most common site of involvement in our study was the face. This was in concordance with the study done by

**Table 2:** Clinical profile of children diagnosed with pityriasis alba, vitiligo, and lichen striatus

Characteristics	Pityriasis alba	Vitiligo	Lichen striatus
Boys	16	5	5
Girls	19	14	6
Total	35	19	11
Age group affected	2–8 years (22 cases)	11–14 years (8 cases)	0–5 years (6 cases)
Age of onset	0.8–15.75 years	0–5 years: 3 years 6–10 years: 8.4 years 11–14 years: 11.1 years 15–18 years: 15.5 years	6.71 years
Mean duration of symptoms	2.5 months	2.47 months	9 months
History of atopy	12 (34.28%)	None	4 (36.36%)
History of preceding infection	5 (14.2%)	None	2 (18.18%)
Anemia	2 (5.7%)	None	None
Hypothyroidism	-	None	-
The most common subtype of vitiligo	-	Non segmental: 14 (78.9%) Segmental: 4 (21%)	-
The most common site of involvement	Face (all cases)	Face: 8 (42.1%) Upper extremities: 5 (26.3%) Mucosa: 3 (15.78%) Lower extremities: 3 (15.78%)	Upper limb 5 (45.45%)

Hann and Lee [11], in which the most common site involved was the face and neck. However, the observation made in our study was in contrast to the findings in the study done by Sheth *et al.* [12], in which the most common area affected was lower limbs (62%), followed by face (46%), upper limbs (30%), scalp (25%), and mucosa (18%). In the study done by Gupta [10], the mean age was  $8.45 \pm 2.34$  years and the average duration was 1.9 years, and two patients gave a history suggestive of hypothyroidism. Jain *et al.* [13] conducted a study on 35 children aged <12 years with vitiligo and observed that the most common site of involvement was the face (25.71%) followed by lower limb (20%). The most common pattern seen was vitiligo vulgaris (48.5%) followed by focal vitiligo (25.7%).

The most common cause of post-inflammatory hypopigmentation in our study was atopic dermatitis seen in seven children, followed by varicella infection in six children, seborrheic dermatitis in five, intertrigo in three, and pityriasis rosea, guttate psoriasis, and tinea incognito in one child each which was comparable to the study done by Soni *et al.* [5] where 14% of patients had post-inflammatory hypopigmentation.

Among four children diagnosed with Hansen's disease, two were in the BT spectrum and two in the TT spectrum. The male-to-female ratio was 3:1 and the mean age of onset at the time of diagnosis was 10 years. This was in concordance with the study done by Babu *et al.* [14]; in which out of the 401 new cases of leprosy, 45 (11.2%) were children with 48.9% were female and 51.1% were male. The mean age at the time of presentation was 10.22 years. TT was the most common type encountered in 46.7% followed by BT (44.4%).

In the present study, among 11 children with lichen striatus, 5 were boys and 6 were girls and average duration was 9 months. The most common site involved was the upper limb in 5 patients (45.45%), 2 patients (18.18%) gave the history of preceding illness, and 4 gave the history of atopy. In the study conducted by Das and Adhigari [15], 10 patients presented with lichen striatus with a male-to-female ratio of 1:4, and the mean age of onset was 4.7 years. Upper extremities and trunk were the most common site of involvement with a history of atopy in three patients. The mean age of the children was 7.2 years, and the mean age of onset was 7.36 years. This study was limited by its relatively small sample size.

## CONCLUSION

The most common dermatosis noted was pityriasis alba, followed by post-inflammatory hypopigmentation, vitiligo, and lichen

striatus. The present study delineates the various pediatric hypomelanotic disorders at the tertiary care center.

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