



Original Article

Clinical and Dermoscopic Profile of Hypopigmented Lesions among Children Attending a Tertiary Care Centre

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ABSTRACT

Background: Hypopigmented lesions in children are among the most common skin conditions dermatologists see in clinical practice. Due to the social stigma associated with these conditions, they cause anxiety among children and their parents. Clinical examination alone may not help in making a definite diagnosis in all cases. Histopathology, though considered confirmatory, is invasive. In this context, dermoscopy will be a helpful tool as it is non-invasive, less time consuming and has the potential to improve the diagnostic accuracy.

Aim: To study the clinical profile of hypopigmented lesions in children, and to look for dermoscopic findings of these hypopigmented lesions.

Methods: A descriptive study was conducted among children under 18 years of age with hypopigmented lesions anywhere on the body, attending Dermatology OPD of Government T. D Medical College, Alappuzha from November 2021 to May 2023. Dermoscopic examination was done with Dermlite DL-3 dermoscope. The data obtained was analyzed using SPSS software 16.

Results: The study evaluated 125 children with hypopigmented lesions. Out of 125 patients, 70 were males and 55 were females. Mean age of presentation was 8.16 years. Most common site affected was face (51%) followed by limbs (15%) and trunk (7%). Pityriasis versicolor was the most common diagnosis (55.2%), followed by pityriasis Alba (23.2%), nevus depigmentosus (7.2%), vitiligo (4.8%), polymorphic light eruption (4.8%), seborrheic dermatitis (2.4%), lichen striatus (1.6%) and ashleaf macule (0.8%). Comparison between clinical diagnosis and dermoscopic diagnosis indicates almost perfect agreement between clinical diagnosis and dermoscopic diagnosis.

Conclusion: Most of the hypopigmented lesions in children are benign in nature. Dermoscopy is a useful and reliable tool in improving the accuracy of clinical diagnosis of hypopigmented lesions, there by avoiding invasive procedures.

Keywords: Hypopigmented Macules, Dermoscopy, Pityriasis Alba, Pityriasis Versicolor.

INTRODUCTION

Hypopigmented skin lesions in children are one of the most common complaints that dermatologists encounter in their clinical practice. Face is a common site of involvement in children, and thus, patients usually have cosmetic concerns.^[1] Disorders of hypopigmentation can occur as a consequence of defects in the number and function of melanocytes, a decreased melanisation of melanosomes or a decrease in the transfer process from melanocytes to keratinocytes.^[2]

Some common hypopigmentary disorders in children include pityriasis alba, vitiligo, nevus depigmentosus, pityriasis versicolor, post-inflammatory hypopigmentation, childhood leprosy, hypomelanosis of Ito, lichen sclerosis et atrophicus, pityriasis lichenoid chronica, lichen striatus, tuberous sclerosis complex etc. Prevalence of these conditions varies, depending on geographical locations, environmental factors, type of population studied, cultural and socioeconomic factors.

Hypopigmented skin lesions can at times pose a diagnostic challenge for the physician. Histopathology, though considered confirmatory, is invasive. In this context, dermoscopy stands as a helpful tool as it is non-invasive, less time-consuming and has the potential to improve the diagnostic accuracy. Very few reports have documented the dermoscopic features of hypopigmented lesions in children. In this study, we evaluated the profile of hypopigmented lesions in children by clinical and dermoscopic assessment.

METHODS

A descriptive cross-sectional study was done over 18 months, starting from November 2021 to May 2023. Based on a study by Khater et al³, the sample size was calculated as 120, using the formula $4PQ/d^2$. A total of 125 patients were included. All patients under 18 years of age with hypopigmented lesions anywhere on the body were included in the study. Patients already on topical or systemic treatment for one month were excluded. Those fulfilling the inclusion criteria were enrolled on the study after getting informed written consent from the guardian. A detailed history and clinical examination were done, along with dermoscopic examination. DermLite DL-3 dermoscope was used (magnification x10). 10% KOH examination and Wood's lamp examination were performed in relevant cases.

The data obtained was entered into a Microsoft Excel sheet and analysed using SPSS software 16. The findings were correlated using Kappa statistics.

RESULTS

Among the 125 children included in the study, 70 (56%) were males, and 55 (44%) were females, with a male: female ratio of 1.27:1. The age of patients ranged from 6 months to 16 years, with 52% of them belonging to the age group of 6-12 years. The mean age was 8.16 years. The most common site involved was the face (51%), followed by limbs (15%) and trunk (7%); multiple site involvement was seen in 27% cases. After clinical and dermoscopic examination, children were diagnosed with pityriasis versicolor, pityriasis alba, nevus depigmentosus, vitiligo, polymorphic light eruption, seborrheic dermatitis, lichen striatus and ash leaf macule.

PITYRIASIS VERSICOLOR

69 patients (55.2%) were diagnosed with pityriasis versicolor. 6-12 years was the most common age group affected. 29% patients reported pruritus. The most common site involved was the face (36.2%), followed by limbs (13%) and trunk (11.6%). Scaling was seen in 68.1% cases. 10% KOH examination was done in 14 cases, and 13 of them demonstrated the fungal hyphae and spores.

On dermoscopy, 95.47% cases had a white background, and the rest showed a pink background. White structureless areas were seen in 55 (79.7%) cases. Pigment network was reduced in 67 cases (97.1%). Fine scales were found in 57 patients (82.6%). Scaling along creases in 38 cases [Figure-1]. Perifollicular white areas and perifollicular scaling were found in 21.7% patients [Figure-2]. Dermoscopy findings of pityriasis versicolor is summarised below [Table 1].



Figure 1: Dermoscopy of pityriasis versicolor showing scaling along creases

Dermoscopic Finding	Frequency (%)
Reduced pigment network	67 (97.1%)
White structureless areas	55 (79.7%)
Double edged scales	38 (55.1%)
Fine scales	57 (82.6%)
Perifollicular white areas	15 (21.7%)
Perifollicular scaling	4 (5.8%)

Table 1: Dermoscopy of pityriasis versicolor

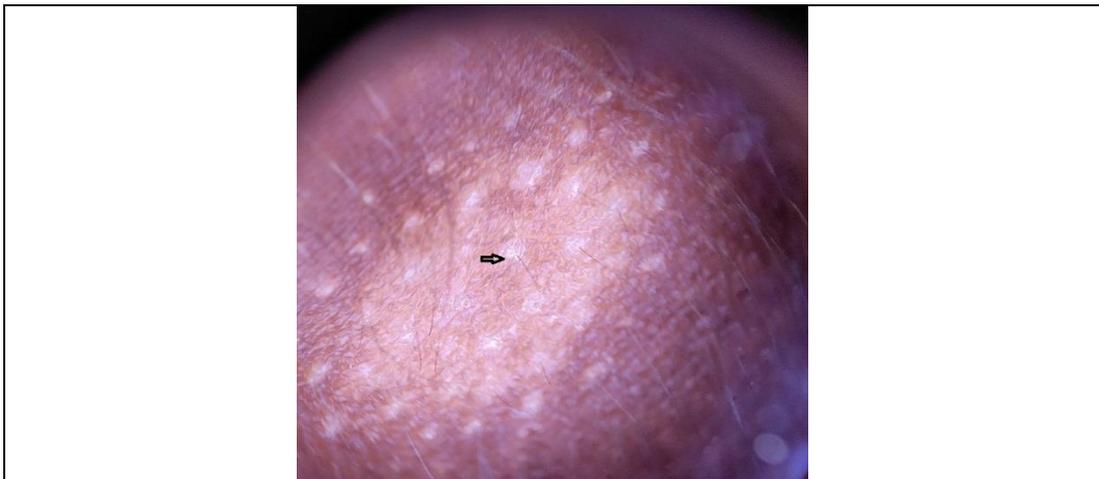


Figure 2: Dermoscopy of pityriasis versicolor showing perifollicular scaling and hypopigmentation

Pityriasis Alba

29 patients (23.2%) were diagnosed with pityriasis alba. The most common site was the face (82.8%), followed by the trunk and limbs.

On dermoscopy, the background was white in 28 (96.6%) cases and pink in 1 (3.4%) case. White structureless areas and fine scales within and outside the lesion were also noted [Figure-3].

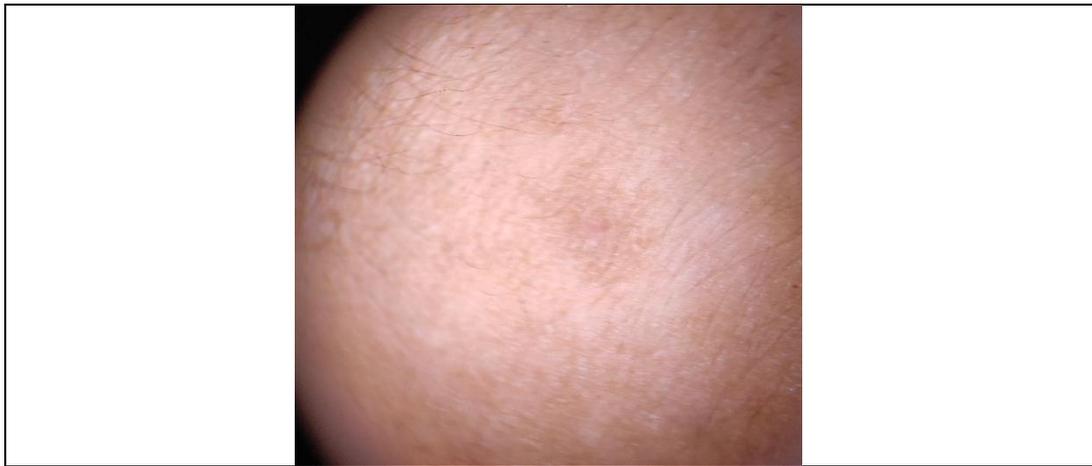


Figure 3: Dermoscopy of pityriasis alba showing white structureless areas and fine scaling

Vitiligo

88.9% of children with vitiligo presented with multiple lesions. The most common site was on the limbs, followed by the face. 55.6% showed leukotrichia.

All patients with vitiligo showed a white background on dermoscopy. Other features observed were white structureless areas, an absent and reduced pigment network, perifollicular pigmentation, and perilesional hyperpigmentation. 4 cases showed amoeboid pattern, 3 had polka dot pattern [Figure-4], and 1 showed nebuloid pattern [Table 2].

Dermoscopic Finding	Frequency (%)
Diffuse white glow	8 (88.9%)
White structureless areas	6 (55.6%)
Absent pigment network	7 (77.8%)
Reduced pigment network	2 (22.2%)
Amoeboid pattern	4 (44.4%)
Polka dot pattern	3 (33.3%)
Nebuloid pattern	1 (11.1%)
White hairs	5 (55.6%)
Perifollicular pigmentation	4 (44.4%)
Perilesional hyperpigmentation	3 (33.3%)

Table 2: Dermoscopy of vitiligo



Figure 4: Dermoscopy of progressive vitiligo showing polka dot pattern

Nevus Depigmentosus

6 patients were diagnosed with nevus depigmentosus. The lesions were multiple in half of the cases. Face and limbs were

the most common sites involved.

On dermoscopy, 5 patients (83.3%) showed a background white color and one case (16.7%) had a pink background. A uniform faint pigment network was observed in all cases. Serrated borders were seen in 4 cases [Figure-5].

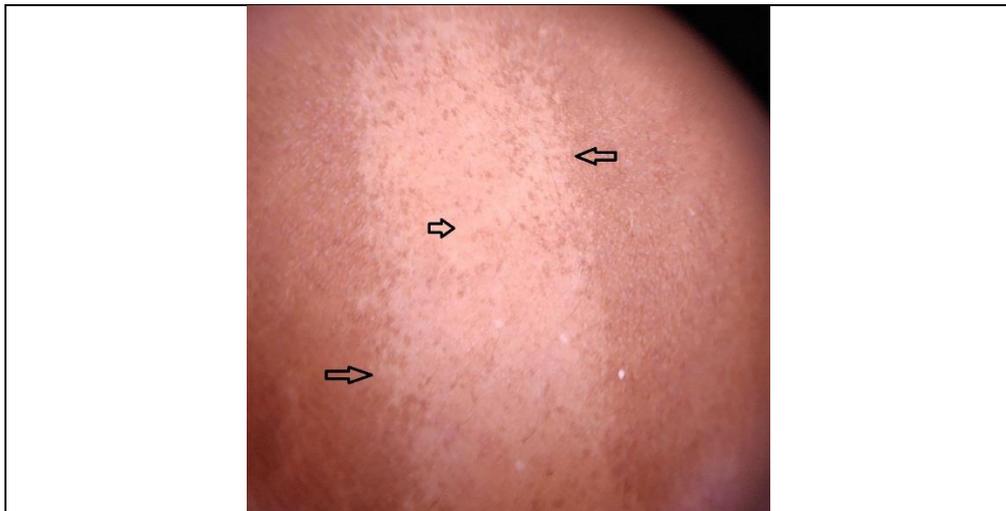


Figure 5: Dermoscopy of nevus depigmentosus showing white structureless areas with irregular serrated border

Polymorphic Light Eruption (PLE)

6 children presented with PLE. Median age was found to be 12 years. All patients had lesions on the face, with well-defined borders. Surface showed scaling in 33.3% cases.

16.7% of children with PLE demonstrated a brown background. Zones of reduced pigment network with areas of increased pigment network were found in all cases. White structureless areas were observed in 83.3%. Surface scaling was also seen.

Seborrheic Dermatitis

3 children were presented with seborrheic dermatitis. Median age was 12 years. The site of the lesion was the face, with multiple lesions, showing well-defined borders and fine scaling.

All cases showed a pink background on dermoscopy. A reduced pigment network was observed in 33.3% cases. Fine scales were seen within the lesion in 66.6% cases, while fine scales within and outside the lesion were found in 33.3% [Figure-6].



Figure 6: Dermoscopy of seborrheic dermatitis showing white scales

Lichen Striatus

2 patients were diagnosed with lichen striatus. Both cases were progressive and the site was on the limbs, with well-defined borders and no surface changes.

Reduced pigment network and grey granular pigmentation and erythematous vascular blotches were seen in dermoscopy [Table-3].

Dermoscopic Finding	Frequency (%)
Linear pattern	2 (100%)
Reduced pigment network	2 (100%)
Grey granular pigmentation	2 (100%)
Erythematous vascular blotches	1 (50%)

Table 3: Dermoscopy of lichen striatus

ASH Leaf Macule

One patient who presented with an off-white-coloured macule on the upper limb was diagnosed with an ash leaf macule. Dermoscopy demonstrated white structureless areas with total loss of pigment network. Areas with faint reticular pigmentation were also observed [Figure-7].



Figure 7: Dermoscopy of Ash leaf macule showing structureless areas with total loss of pigment network

DISCUSSION

Out of 125 patients, male to female ratio was 1.27:1. This was similar to the studies by Sudheer et al[4] (M:F-1.12), Sori et al[5] (M:F-1.17 and Soni et al[6] (M:F-1.05). Mean age of presentation in our study was 8.16 years. In a study by Babu et al, the mean age of onset was 9.8 years.[7]

Most common site involved was face, followed by the limbs and trunk. This was in concordance with the findings by Kumar et al.[2] Other studies by Sudheer et al,[4] Sori et al,[5] Soni et al[6] and Babu et al[7] also had similar findings.

Pityriasis versicolor was the most common condition encountered in our study, followed by pityriasis alba, nevus depigmentosus, vitiligo, polymorphic light eruption, seborrheic dermatitis, lichen striatus and ashleaf macule. Observations by Pinto and Bologna was comparable to our study.[1] Highly prevalent nature of pityriasis versicolor in our study can be explained by higher environmental temperatures and higher humidity in this part of the world. The most common site involved was face, followed by limbs and trunk. This was comparable to the study by Jena et al.[8] Similar finding was observed by Akpata et al[9] and Terragni et al too.[10]

Dermoscopy findings of pityriasis versicolor like white background, white structureless areas, reduced pigment network, fine scales, scales along skin creases, perifollicular white areas and perifollicular scaling were similar to the study by Kaur

et al, where they observed reduced pigmentary network and perifollicular hypopigmentation, scaling and follicular hypopigmentation.[11]

Pityriasis alba was most commonly observed between 6-12 years. Solitary lesion was more common than multiple lesions. A study by Lv et al among 2726 patients of pityriasis alba found that the disease occurred in children aged 1 to 14 years old.[12] This was explained by findings of previous studies which have shown that the thickness of the epidermis after puberty is significantly higher than that in infancy. Also, sebaceous glands increase after puberty.[13]

In dermoscopy of pityriasis alba showed ill - demarcated white areas with reduced pigment network. Fine scales within and outside the lesion were present in many cases. Similar observations were made by Khitam Al Refu.[14] findings by Ankad et al was also comparable to our study.[15] 9 cases of vitiligo were studied here. Median age was 9 years. All the cases were progressive lesions and were asymptomatic.

Dermoscopy of vitiligo showed a white background in all of them. Diffuse white glow was found in 88.9% cases. Other dermoscopic features observed were white structureless areas, absent or reduced pigment network, white hairs, amoeboid pattern, polka dot pattern and nebuloïd pattern. Perifollicular pigmentation and perilesional hyperpigmentation were also observed. A case of vitiligo was clinically diagnosed as pityriasis alba/ seborrheic dermatitis, on dermoscopy showed white hairs, white glow and polka dot pattern, which aided in modifying the final diagnosis as progressive vitiligo.

In a study by Khitam Al Refu, he observed diffuse white glow, perifollicular hyperpigmentation white vellus and terminal hair, findings comparable to our study.[14] Of the 6 patients with nevus depigmentosus, solitary and multiple lesions were observed. In dermoscopy, 5 cases showed background white color and 1 had a pink background. Uniform faint pigment network and serrated borders were also observed. Similar findings have also been reported by Ankad et al and they have described the serrated borders as pseudopod pattern.[16]

This study had 6 cases of polymorphic light eruption. Median age was found to be 12 years. 83.3% cases had onset between 6-12 years of age. All of them were present on the face, with well-defined borders and were progressive. Surface scaling was seen.

Dermoscopy of PLE showed background white color in majority and 1 patient showed brown background. Zones of reduced pigment network with areas of increased pigment network were found in all cases. White structureless areas and scaling were also observed on dermoscopy. Ankad et al, in their study, have found similar findings.[15] They observed well to ill-defined white structureless areas with coarse brown and white scales in a diffuse distribution in the lesions confined to the face. Other findings in that study were the presence of yellow clod signs or serocrusts and clustered red dots.

There were 3 cases of seborrheic dermatitis, all being females. Median age was 12 years. In dermoscopy, all the 3 cases with seborrheic dermatitis showed a pink background. Reduced pigment network and fine scales were also seen. A study on facial inflammatory dermatoses observed that the most typical dermoscopic findings of seborrheic dermatitis consist of dotted vessels in a patchy distribution and fine yellowish scales (in combination or not with white scales).[17]

Among the 2 cases of lichen striatus, one patient reported pruritus. Both the cases were progressive and site was on the limbs, with well-defined borders and no surface changes. In a study by Kim et al, most common location was upper extremities, followed by lower extremities, head and neck, trunk in their study.[18]

Dermoscopy showed white background, reduced pigment network and grey granular pigmentation. Erythematous vascular blotches were seen in one case. Similar findings were also observed by Kim et al.[18] 1 case of ashleaf macule was diagnosed in a 6 month old child who presented with single, well-defined lesion on the upper limb.

Dermoscopy showed white structureless areas with total loss of pigment network as well as areas with faint reticular pigmentation. These findings have been reported in previous dermoscopic studies also.[19]

Comparison between clinical diagnosis and dermoscopic diagnosis was done using kappa statistics and a k value of 0.949 was found, which indicates almost perfect agreement between clinical diagnosis and dermoscopic diagnosis. Two cases which were diagnosed as pityriasis alba clinically, on dermoscopy showed features of vitiligo and seborrheic dermatitis and the diagnosis was revised.

Limitations of the Study

The small sample size might not have revealed all the features of diseases that are included in the study. Certain disorders of hypopigmentation, such as hypomelanosis of Ito, childhood leprosy, nevus anemicus, etc were not studied. Histopathology was not done to ascertain the diagnosis. Non-availability of a dermoscope with higher magnification was another limitation of this study

CONCLUSION

Our study highlights the role of dermoscopy to diagnose disorders of hypopigmentation of skin and avoiding invasive procedures like biopsy. We could also initiate treatment on the very first day of presentation based on dermoscopic diagnosis. However, some conditions may show non-specific features on dermoscopy. Hence, we cannot completely avoid histopathology in all cases and it must be done in all doubtful cases to arrive at a definite diagnosis.

REFERENCES

1. Pinto FJ, Bolognia JL. Disorders of hypopigmentation in children. *Pediatr Clin North Am* 1991;38(4):991-1017.
2. Kumar U, Varma K, Agrawal M, et al. A clinico-epidemiological study of hypopigmented and depigmented lesions in paediatric age group. *Indian J Clin Exp Dermatol* 2023;9(2):77-83.
3. Khater MH, Abbas RA, Elshobaky OA, et al. Prevalence of hypopigmentary disorders in primary school children in Zagazig City, Sharkia Governorate, Egypt. *J Cosmet Dermatol* 2022;21(3):1208-15.
4. Sudheer N, Pratheepa AR, Karthik S, et al. Clinicoepidemiological study of hypo-pigmented lesions in paediatric age group attending a tertiary care center. *International Journal of Health and Clinical Research* 2021;4(16):116-22.
5. Sori T, Nath AK, Thappa DM, et al. Hypopigmentary disorders in children in South India. *Indian J Dermatol*. 2011;56(5):546.
6. Soni B, Raghavendra K, Yadav D, et al. A clinico- epidemiological study of hypopigmented and depigmented lesions in children and adolescent age group in Hadoti region (South East Rajasthan). *Indian J Paediatr Dermatol* 2017;18(1):9.
7. Babu A, Prasad A. A clinical study of pediatric hypomelanotic dermatoses at tertiary care center. *Indian Journal of Child Health* 2019;06:654-7.
8. Jena DK, Sengupta S, Dwari BC, et al. Pityriasis versicolor in the pediatric age group. *Indian J Dermatol Venereol Leprol* 2005;71(4):259-61.
9. Akpata LE, Gugnani HC, Utsalo SJ. Pityriasis versicolor in school children in Cross River State of Nigeria. *Mycoses* 1990;33(11-12):549-51.
10. Terragni L, Lasagni A, Oriani A. Pityriasis versicolor of the face. *Mycoses* 1991;34(7):345-7.
11. Kaur I, Jakhar D, Singal A. Dermoscopy in the evaluation of pityriasis versicolor: a cross sectional study. *Indian Dermatol Online J* 2019;10(6):682-5.
12. Lv Y, Gao Y, Lan N, et al. Analysis of epidemic characteristics and related pathogenic factors of 2726 cases of pityriasis alba. *Clin Cosmet Investig Dermatol* 2022;15:203-9.
13. Bassaly M, Miale A, Prasad AS. Studies on pityriasis alba. A common facial skin lesion in Egyptian children. *Arch Dermatol* 1963;88:272-5.
14. Al-Refu K. Dermoscopy is a new diagnostic tool in diagnosis of common hypo-pigmented macular disease: a descriptive study. *Dermatol Reports* 2018;11(1):7916.
15. Ankad BS, Smitha SV, Errichetti E, et al. Facial pityriasis alba, polymorphous light eruption, and vitiligo in children: a dermoscopic distinction. *J Skin Stem Cell* 2021;8(4):e121848.
16. Ankad B, Shah S. Dermoscopy of Nevus Depigmentosus. *Pigment Int* 2017;4:121.
17. Lallas A, Argenziano G, Apalla Z, et al. Dermoscopic patterns of common facial inflammatory skin diseases. *J Eur Acad Dermatol Venereol* 2014;28(5):609-14.
18. Kim DW, Kwak HB, Yun SK, et al. Dermoscopy of linear dermatosis along Blaschko's line in childhood: Lichen striatus versus inflammatory linear verrucous epidermal nevus. *J Dermatol* 2017;44(12):e355-6.
19. Malaka S, Ranglani H, Malakar S. Dermoscopic features of congenital hypopigmentary disorders. *Our Dermatol Online* 2021;12(e):1-5.