Original Research Article

Clinicoepidemiological study of hypopigmented lesions in paediatric age group attending a teritiary care center

Neelam Sudheer[1], A. Raj Pratheepa[2], Sunki Karthik[3*], Kolla Sri Harsha[4], V.Praveena[5]

[1]Associate Professor, Department of Dermatology, STD and Leprosy, Government Medical College, Siddipet/GMC Siddipet, Telangana, India
[2]Assistant Professor, Department of Dermatology, STD and Leprosy, Government Medical College, Siddipet/GMC Siddipet, Telangana, India
[3]Senior Resident, Department of Dermatology, STD and Leprosy, Government Medical College, Siddipet/GMC Siddipet, Telangana, India
[4]Senior Resident, Department of Dermatology, STD and Leprosy, Government Medical College, Siddipet/GMC Siddipet, Telangana, India
[5]Assistant Professor, Department of Biochemistry, Government Medical College Nalgonda, Rahamath Nagar, Ramgiri, Golla Guda Rural, Telangana, India

Received: 10-06-2021 / Revised: 14-07-2021 / Accepted: 23-08-2021

Abstract

Background: Hypopigmented lesions in children is a very common occurrence. The aim of my study is to evaluate the various causes of hypopigmentation in children There are no sufficient studies in India about evaluation of hypopigmented lesions in pediatric age group. **Objectives:** To know the clinical characteristics of hypopigmented lesions in pediatric age group and to evaluate the most common causes of hypopigmented lesions in pediatric age group. **Methods:** Source of data consisted of three hundred consecutive cases presenting with hypopigmented lesions in pediatric age group. A detailed history of the patient was recorded like name, age, sex, onset, nature and duration of illness, predisposing factors like any skin diseases, prolonged illness, family history etc. After this, samples were taken for relevant investigations like complete hemogram, biopsy, KOH mount, slit skin smear and assessed for the causes of hypopigmented lesions**. Results:** In our study, the most common disorder was pityriasis alba seen in 39%, followed by pityriasis versicolor in 19.6%,vitiligo in 15.7%, post inflammatory hypopigmentation in 12.7%, primary disorders of hypopigmentation in 7.3%, Hansen's disease in 3.7% and miscellaneous conditions in 2% of the cases. **Conclusions:** The most common conditions are benign and self-limiting, which requires proper counseling of the parents. Vitiligo or Hansen's disease has to be ruled out to alleviate parents anxiety.

Keywords: Hypopigmentary disorders, pityriasis alba, vitiligo, post inflammatory hypopigmentation, Hansen's disease, pityriasis versicolor.

Introduction

Hypopigmented lesions in children is a very common occurrence. Hypopigmentation has been referenced in many ancient religious texts as a curse or contagious disease.

The colour of the skin is mainly due to melanin and blood but can be altered in non-physiological conditions such as carotenemia, drug intake, jaundice and chronic renal failure. Hypopigmentation refers to any form of decreased pigmentation, whereas hypomelanosis refers specifically to a decrease in melanin content. Depigmentation, in contrast to hypopigmentation, describes the almost total loss of pigmentation, resulting in a whitish appearance that comes from the underlying dermis.

*Correspondence
Dr. Sunki Karthik
Senior Resident, Department of Dermatology, STD and Leprosy, Government Medical College, Siddipet/GMC Siddipet, Telangana, India
E-mail: karthik_sunki@gmail.com

Hypopigmented lesions in children can be as benign as pityriasis alba, pityriasis versicolor and as severe as indeterminate leprosy. The other causes are nevus anemicus, post inflammatory depigmentation, polymorphic light eruption, hypomelanosis of Ito, vitiligo, nevus depigmentosus, idiopathic guttate hypomelanosis, etc.

The vast majority of hypopigmentation encountered in the modern world is neither contagious nor dangerous, fear, anxiety. Even if these conditions cannot be cured, simple understanding may provide some relief. The aim of my study is to evaluate the various causes of hypopigmented lesions in pediatric age group.

Materials and methods

The present study was conducted by selecting three hundred consecutive cases of hypopigmented lesions in pediatric age group attending the outpatient department of Dermatology, STD and Leprosy from January 2019 to January 2021.

Inclusion criteria

Patients between 0-18 years of both sexes presenting with hypopigmented lesions sample size: 300

Exclusion criteria

The children whose parents have not given consent for the study were excluded from the study.

A detailed history of the patient was taken like name, age, sex, onset, nature and duration of illness, predisposing factors like any skin diseases, prolonged illness, family history etc. Informed consent of

the parents or the guardian was taken. Photographs were taken for documentation. After this samples were taken for relevant investigations. Results of the investigations were collected and assessed for the causes of hypopigmented lesions.

The following investigations were done depending upon the clinical presentation-

1. Skin Biopsy was done in suspected cases of Hansen's disease, vitiligo, nevus depigmentosus etc
2. Woods lamp examination was done in suspected cases of vitiligo, nevus depigmentosus, pityriasis versicolor.
3. KOH mount- The skin scrapings in suspected cases of pityriasis versicolor was collected directly on the glass microscopic slide held against the scalp. 10% KOH was added and covered by a cover slip. Examination was done under low power of a microscope to identify the hyphal forms and sphagetti and meat ball appearance.
4. Complete hemogram was done to rule out any nutritional deficiencies and hematological abnormalities.
5. Slit skin smear was done in suspected cases of Hansen's disease.

Results

The following observations were made in this cross-sectional study which included 300 patients.

Table 1: Patient details in study

Age In Years	Male		Female		Total	
	No	%	No	%	No	%
<1	8	2.7	12	4	20	6.7
1-3	22	7.3	21	7	43	14.3
4-6	24	8	28	9.3	52	17.3
7-12	54	18	60	20	114	38
13-18	52	17.3	19	6.5	71	23.7
Total	160	53	140	47	`300	100
Onset						
Primary	11	3.6	21	7	32	10.7
Acquired	149	49.4	119	40	268	89.3
Total	160	53	140	47	300	100
Diagnosis						
Pityriasis Alba	68	23	48	16	116	39
Pityriasis Versicolor	26	9	33	11	59	19.6
Vitiligo	21	7	26	9	47	15.7
Post Inflammatory Hypopigmentation	17	5.5	21	7	38	12.7
Primary Disorders	13	4	9	3	22	7.3
Hansen's Disease	8	2.5	3	1	11	3.7
Miscellaneous	7	2	0	0	7	2
Total	160	53	140	47	300	100
Presenting Complaints						
Redness	9	3	12	4	21	7
Itching	21	7	6	2	27	9
Photosensitivity	7	2.33	9	3	16	5.33
Loss Of Sensations	5	1.66	2	0.66	7	2.33

Of the 300 patients included in the study, 159(53%) were males and 141 (47%) were females. Ratio of Male: Female was 1.127 : 1 in the current study. The youngest patient in the study was 1month old male child and the eldest was 18 year old male. The maximum number of patients belonged to 7-12 years age group (38%), followed by 13-18 years (23.7%). The mean age was 8.41 years. In this study 32 patients had a primary disorder (10.7%) and 268 had acquired condition (89.3%).In this study the most common disorder was Pityriasis Alba in 116 cases (39%), followed by Pityriasis Versicolor in 59 cases (19.6%), Vitiligo in 47 cases (15.7%), primary Post Inflammatory Hypopigmentation in 38 cases (12.7%) primary disorders in 22 cases (7.3%) Hansen's in 11 cases (3.7%) and miscellaneous conditions in 7 cases (2.33%). The most common symptom was Itching seen in 27 cases (9%), followed by Redness in 21 cases (7%), Photosensitivity in 16 cases (5.33%) and loss of sensations in 7 cases (2.33%).Family history was seen in 5 cases (45.45%) of Hansen's disease, followed by 21 cases (18.10%) of family history of atopy in Pityriasis Alba, 7 cases (14.9%) of Vitiligo and 3 cases (13.6%) of Congenital disorders.

Table 2: Site wise distribution of cases

Site	Number Of Cases	%
Face	201	67
Back	23	7.6
Chest	24	8
Abdomen	14	4.6
Hands	56	18.6
Legs	39	13
Buttocks	11	3.6
Genitalia	5	1.6
Whole Body	16	5.3

Face was the most common affected site seen in 201 cases (67%), followed by Hands in 56 cases (18.6%), and Legs in 39 cases (13%), Chest in 27 cases(8%), back in 23 cases (7.6%), Whole Body in 16 cases (5.3%), Abdomen in 14 cases (4.6%), Buttocks in 11 cases (3.6%) and Genitalia

in 5 cases (1.6%).Pruritus was most commonly seen in 12 cases (92.3%) of polymorphic light eruption followed by 1 case(33.33%) of pityriasis lichenoideschronica.

Table 3:Duration wise distribution

Duration In Months	<3		4-6		7-12		13-60		61-120		>120	
Disorders	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No**	**%**
Pityriasis Alba	35	11.6	38	12.6	27	9	16	5.3	0	0	0	0
Vitiligo	12	4	9	3	7	2.3	16	5.3	3	1	0	0
Post Inflammatory Hypopigmentation	24	8	8	2.6	4	1.3	2	0.6	0	0	0	0
Pityriasis Versicolor	31	10	13	4.33	11	3.6	4	1.33	0	0	0	0
Hansen's Disease	5	1.66	3	1	1	0.33	1	0.33	1	0.33	0	0
Congential Disorders	2	0.66	1	0.33	2	0.66	4	1.33	5	1.66	8	2.66
Miscellaneous	1	0.33	2	0.66	1	0.33	2	0.66	1	0.33	0	0
Total	110	36.7	74	24.7	53	17.7	45	15	10	3	8	2.66

In this study, 110 cases (36.7%) presented with less than 3 months history of duration, followed by 74 cases (24.7%) with 4-6 months duration and 53 cases (17.7%) with 7-12 months duration. The mean duration of disorders was 1.70 years.73 cases (62.9%) of pityriasis alba had duration less than 6 months.In our study, 106 cases (35%) had age of onset between 7-12 years, followed by 68 cases (23%) which had age of onset of less than 1 year. The mean age of onset was 8.41 years. Out of 116 cases of Pityriasis Alba, 64 cases (55.1%) had history of atopy.

Table 4:Causes of post inflammatory hypopigmentation and primary hypopigmentation

Causes Of Post Inflammatory Hypopigmentation	Number Of Cases N=38	%
Polymorphic Light Eruption	4	10
Trauma	4	10
Ad	11	29
Folliculitis	2	5
Lichen Striatus	1	3
Miliria	1	3
Psoriasis	3	7
Irritant Contact Dermatitis	4	10
Epidermolysis Bullosa Simplex	1	3
Pityriasis Lichenoid Chronica	1	3
Burns	2	5
Fungal	1	3
Pityriasis Rubra Pilaris	1	3
Steven Johnson Syndrome	1	3
Lichen Nitidus	1	3
Total	38	100
Causes Of Primary Hypopigmentation		
Hypomelanosis Of Ito	11	3.66
Nevus Depigmentosus	4	1.33
Halo Nevus	1	0.33
Piebaldism	2	0.66
Nevus Anemicus	2	0.66
Tuberousd Sclerosis Complex	1	0.33
Dyschromatosis Universalis Hereditaria	1	0.33
Total	22	7.33

The most common cause of post inflammatory hypopigmentation was AD eruption seen in 11 cases (29%) followed by 4 cases (10%) of Polymorphic Light Eruption, Trauma, Irritant Contact Dermatitis; 3 cases (7%) of Psoriasis; 1 case (3%) each of Lichen Striatus, Miliria, Epidermolysis Bullosa Simplex, Pityriasis Lichenoid Chronica, Fungal, Pityriasis Rubra Pilaris, Steven Johnson Syndrome, Lichen Nitidus.The most common primary disorder of Hypopigmentation was Hypomelanosis of Ito in 11 cases (3.66%) followed by 4 cases of nevus depigmentosus (1.33%); 2 cases (0.67%) each of Nevus Anemicus, Piebaldism; 1 case (0.33%) each of Hanonevus, Dyschromatosis Universalis Hereditaria and Tuberous Sclerosis Complex.The most common type of Hansen's disease was BT type in 8 cases (73%), followed by 1 case (9%) each of TT type and indeterminate type and BL type.

The most common types seen was vitiligo vulgaris in 18 cases (38%), followed by segmental vitiligo in 14 cases (30%), focal vitiligo in 11 cases (24%), acrofacial vitiligo in 3 cases (6%) and mucosal vitiligo in 1 case (2%).The most common associations were anemia seen in 3 cases (6%), followed by 2 cases (4%) of hypothyroidism and alopecia areata, hyperthyroidism and psoriasis in 1 case (2%).Majority of cases of pityriasis versicolor were male – 26 cases (44%), followed by 33 female cases (56%). Face was the most site effected in 31 cases (52.5%), followed by 18 cases (30.5%) of upper back; 9 cases (15.3%) of face, upper back, chest, upper arm and 1 case (1.7%) of leg involvement.

KOH Examination was positive in 51 cases (86.4%) and negative in 8 cases (13.6%) of pityriasis versicolor. 74.6% of cases were in the age group 8-18 years, followed by 23.8% of cases were in the age group 1-7 years and 1.6% cases were less than 1 year.

Table 5: Associated conditions in study

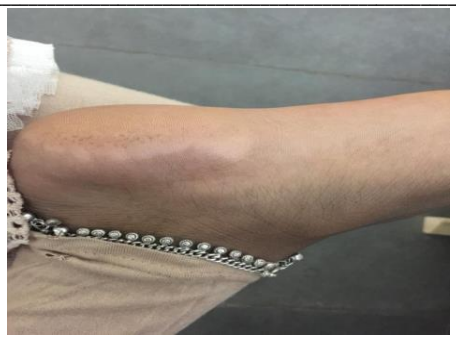
Associated Skin Conditions	Number N=27	%
Tinea Capitis	6	11.6
Molluscum Contagisosum	1	2
Keratosis Pilaris	1	2
Perioral Dermatitis	1	2
Acanthosis Nigricans	1	2
Lichen Spinulosus	7	13.4
Pityriasis Rosea	1	2
Acne	8	15
Alopecia Areata	3	5.7
Pityriasis Rubra Pilaris	1	2
Seborrheic Dermatitis	4	7.7
Guttate Psoriasis	2	3.8
Lichen Straitus	1	2
Vitiligo	4	7.7
Atopic Dermatitis	7	13.4
Insect Bite Reaction	3	5.7
Total	52	100
Systematic Associations		
Anemia	43	14
Hypothyroidism	2	0.66
Mental Retardation	1	0.33
Seizures	5	1
Hyperthyroidism. Short Stature, Hepatomegaly, Polydactyly, Obesity With Acantosis Nigricans	1	0.33
Anemia, Hepatosplenomegaly With Thrombocytopenia	1	1
Atopy	14	4.66

The most common associated was Acne with 8 cases (15%) each. The most common association anemia seen in 43 cases (14%); 28 cases were seen in pityriasis alba followed by 5 cases (1%) of seizers ; 2 cases of hypomelanosis of Ito and 1 case of Tuberous sclerosis complex; 2 cases (0.66%) of hypothyroidism, 3 cases (1%) of anemia, hepatosplenomegaly with thrombocytopenia and 14 cases (4.66%) with history of atopy were seen.In this study, there were 2 cases (0.67%) of Lichen Sclerosuset Atrophicus, followed by 1 case (0.33%) each of progressive macular hypomelanosis , generalized idiopathic guttetehypomelanosis, pityriasis lichenoid chronic, nutritional hypomelanosis and steroid induced depigmentation.

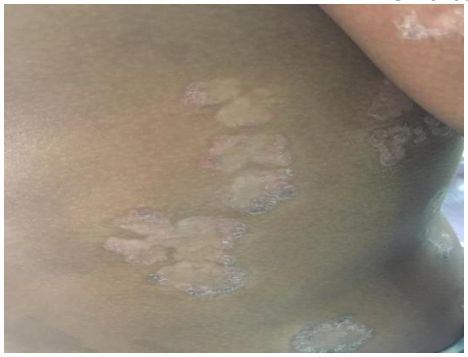
Wood's lamp examination of all vitiligo and nevus depigmentosus cases showed accentuation of hypopigmentation, whereas in nevus anemicus and pityriasis alba, there was no accentuation. There was coppery orange fluorescence of pityriasis versicolor.

Pityriasis Alba (Face)

Vitiligo Vugaris



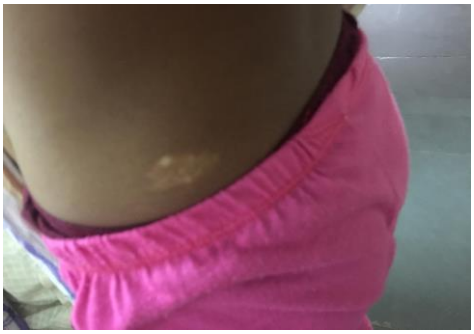
Childhood Acral Vitiligo



Post Inflammatory Hypopigmentation (Psoriasis)

Polymorphic Light Eruption

Pityriasis Versicolor



Ash Leaf Macule of Tuberous Sclerosis

Fig 1: Photographs in study

Discussion

The disorders of hypopigmentation in children have been studied by Pinto and Bolognia and Sori et al in the past. In our study, the most common hypopigmentary disorders were pityriasis alba, Pityriasis versicolor, vitiligo, post inflammatory hypopigmentation, Primary disorder and Hansens. According to Pinto and Bolognia, the most common disorders of hypopigmentation in children were pityriasis alba, vitiligo, nevus depigmentosus, and tinea versicolor [1]. Leprosy is one of the common causes of hypopigmentation in India as leprosy is endemic in India. In the study by Sori et al, children below the age group of 14 years have been considered.[2] In our study, we have included pediatric cases up to the age group of 18 years as per Nelson.In this cross-sectional study which included 300 patients, 47% patients were females and 53% were males. The ratio of males to females was 1.127: 1. In our study, majority of patients belonged to the age group 7-12 years (38%) and 13-18 years (23.7%) and the mean age of onset was 8.41 years. 9.33% of patients had onset at birth. The mean duration was 1.70 years. According to Sori et al, the most common age group was 6–10 years contributing to 30.0% children, followed by 11–14 years contributing to 28.1%. The mean of age of onset was 7.36 years. 9.7% of children had onset at birth and the mean duration of the disorders was 1.64 years[2].According to Bajarang Soni the majority of children belonged to the age group 0–6 years (41%) and the mean age of onset was 7.96 ± 5.24 years. At birth, only 11% of children had symptoms[4]. According to Tukaram Sori most common age group was 6–10 years contributing to 34 out of 113 (30.0%) children, followed by 11–14 years contributing to 32 out of (28.1%). The mean of age of onset was 7.36 years. Eleven out of 113 (9.7%) children had onset at birth[2].In this study, males comprised 53% and females comprised 47 %. According to Sori et al, males constituted 53.98 % and females constituted 46.02%. According to Bajarang Soni et al male constitute 51.33% and Female constitute 48.66%[4]

In our study, the most common disorder was pityriasis alba, seen in 39%, followed by pityriasis versicolor in 19.6%, Vitiligo in 15.7%, post inflammatory hypopigmentation in 12.7% %, primary disorders of hypopigmentation in 7.3%, Hansen's disease in 3.7%, pityriasis versicolor in 5%and miscellaneous conditions in 2% of the cases.

The most common primary disorder of hypopigmentation was hypomelanosis of Ito in 3.66%, followed by nevus depigmentosus 1.33%, 0.66% each of piebaldism, nevus anemicus 0.33% each of halonevus, tuberous sclerosis complex and Dischromatosus

Universalis Hereditaria Miscellaneous conditions were 0.67% of nutritional hypomelanosis, followed by 0.33% each of progressive macular hypomelanosis, generalized idiopathic guttate hypomelanosis, pityriasis lichenoideschronica, lichen sclerosus et atrophicus and steroid induced depigmentation.

According to Sori et al, the most common hypopigmentary disorder was pityriasis alba (24.7%), followed by vitiligo (20.4%), leprosy (11.5%), nevus depigmentosus (10.18%), and tinea versicolor (6.2%); others were hypomelanosis of Ito (4.42%), post-inflammatory hypopigmentation (4.42%), pityriasis rosea (3.54%), steroid-induced hypopigmentation (3.54%), lichen sclerosus et atrophicus (2.65%), pityriasis lichenoideschronica (2.65%), lichen striatus (1.77%), oculocutaneous albinism (1.77%), tuberous sclerosis complex (1.77%), pigmentary mosaicism (0.88%), and Griscelli syndrome (0.88%) [2]. According to Bajarang Soni the most common disorder was pityriasis alba, seen in 27.33%, followed by pityriasis versicolor in 21%, vitiligo 19.33% post-inflammatory hypopigmentation in 14%, primary disorders of hypopigmentation in 13%, Hansen's disease in 1.33%and miscellaneous conditions in 4% of the cases [4].

In our study, face was the most common affected site seen in 67%, followed by Hands in 18.6%, and Legs in 13%, chest in 8%, back in 7.6%, whole body in 5.3%, abdomen in 4.6%, buttocks in 3.6% and genitalia in 1%. According to Sori et al, face was the most common affected site in 28.6% children, followed by upper limb (11.8%), lower limb (11.3%), chest (10.3%), back and abdomen (9.2%) ,2.65% children had generalized involvement [51]. According to Bajrang Soni et al [4]. The face was the most commonly affected site seen in 50.33%, followed by back in 30%, chest in 18.33%, legs in 14.33%, hands in 10.33%, abdomen in 6.66%, whole body in 3.33%, and genitalia in 0.66% In this current study, family history was seen in 5 cases of Hansen's disease, followed by 21 cases of family history of atopy in pityriasis alba, 3 cases of congenital disorders and 7 cases of vitiligo. According to Sori et al, family history was noted in four cases – one case of vitiligo had affected mother and sister, another case of vitiligo had affected grandfather, and two cases of BT leprosy had father having lepromatous leprosy [2]. According to Bajarang Soni et al Family history was noted in four cases – one case of vitiligo had affected mother and sister, another case of vitiligo had affected grandfather, and two cases of BT leprosy had father having lepromatous leprosy[4].

Out of 116 cases of pityriasis alba, majority of the patients (88.60%) were below 12 years. 58.1% had history of atopy. Anemia was seen in 14% of cases. 63.9% of pityriasis alba had duration less than 6 months. Sujatha et al., in their study of 200 cases of pityriasis alba, found 69% of their cases below 15 years of age. [5]Personal history of atopy was noted in 17% patients. Anemia was seen in 15.5% of cases. Majority (84.5%) of patients had lesions of less than 6 months duration at the time of presentation. Pityriasis alba is found almost entirely in preadolescent children. In most instances, the lesions clear at puberty, however persistence into adulthood has been reported. Clinical presentation of the lesions was similar to those described by the previous authors. They usually present as well defined or ill-defined, hypopigmented macules with fine superficial scaling.

According to Vinod et al in their study of 200 cases of pityriasis alba, found 69% of their cases below 15 years of age. Personal history of atopy was noted in 17% patients. Anemia was seen in 15.5% of cases. The majority (84.5%) of patients had lesions of <6 months duration at the time of presentation. Pityriasis alba is found almost entirely in preadolescent children. They usually present as well-defined or ill-defined, hypopigmented macules with fine superficial scaling [5].

In this study, the most common type seen was vitiligo vulgaris in 38%, followed by segmental vitiligo in 30%, focal vitiligo in 11 %, acrofacial vitiligo in 6% and mucosal vitiligo in 2%. Family history was seen in 14 % cases of vitiligo. Jaisankar et al reported that vitiligo vulgaris was the commonest type followed by segmental, focal, acrofacial and mucosal vitiligo[6]. According to Sori et al, vitiligo vulgaris was seen in 47.8% cases, segmental vitiligo was seen in 34.7%, localized vitiligo in 8.6% cases, and lip-tip and lip vitiligo in 4.3% each. Family history was seen in 8.6% cases[2].

According to Tukaram et al the most common association with vitiligo was anemia seen in 4 cases (6.25%), followed by 1 case (1.56%) each of hypothyroidism and alopecia areata[1]. Handa et al have reported an autoimmune association in 1.3% of children with vitiligo[7]. Mazereew-Hautier et al have reported association of thyroid function abnormalities without clinical disease in 11.23% of children with non-segmental vitiligo but none in segmental vitiligo[8].

According to Bajarang Soni et al the most common type seen was Vitiligo vulgaris in 51.72%, followed by acrofacial vitiligo in 18.96%, focal vitiligo in 13.79%, segmental vitiligo in 10.34%, and mucosal vitiligo in 5.17%. The face was most common site affected in 46.55% children. Family history was seen in 8.62% cases of vitiligo[4].

In a study conducted by Jain et al on 35 vitiligo patients, observed that most common site of onset of vitiligo was face (25.71%) followed by lower limb (20%). The most common pattern observed in childhood vitiligo was vitiligo vulgaris (48.5%), followed by focal vitiligo (25.7%). Other less common pattern was segmental (11.42%), mucosal (5.7%), mixed (2.8%), contact (2.8%), and acrofacial (2.8%)[9].According to Tukaram et al in a study in 113 children vitiligo was seen in 23 children. Vitiligo vulgaris was seen in 11 (47.8%) cases, segmental vitiligo was seen in 8 children (34.7%), localized vitiligo in 2 girls, and lip-tip and lip vitiligo in one girl each. Two children had familial involvement[1].

In this study, the most common type of Hansen's disease was BT type in 73%, followed by 9% each of TT type and indeterminate type Histopathological features were consistent with the clinical diagnosis in all cases. According to Singal et al, BT leprosy was the most common type, encountered in 70·3% patients and the other clinical types were as follows TT – 5·8%, BB – 1·2, BL- 9·9% and LL – 4·1%. PNL and indeterminate forms were seen in 4·6% and 4·1% patients respectively[10].According to Bajarang Soni et al the most common type of Hansen's disease was BT type leprosy in 75%, followed by 25% of tuberculoid type leprosy [4].

According to Tukaram et al borderline tuberculoid leprosy was the commonest type followed by tuberculoid (TT) leprosy, and indeterminate leprosy[1].

In this study, 74.6% of cases were in the age group 8-18 years, 1.6% of cases were seen in infants. Face was the most common site affected in 52.5%, followed by upper back in 30.5% and extensive involvement of face, chest, upper arm and upper back seen 15.3%. In Jena et al.'s study of pityriasis versicolor in 271 children, majority of children were aged 8–12 years (31.7%), but 10 infants were also affected. Face was the most affected site (39%) and extensive involvement was seen in 45 (16.6%) children with lesions on the back and shoulder[3]. According to Ghosh et al conducted a study a clinicomycological and epidemiological study on pityriasis versicolor in Kolkata and found almost similar to the above observation. Most of the lesions were hypopigmented scaly macules and most commonly involved sites were chest, face, and back[11].

The most common association anemia seen in 43 cases of Anemia, followed by 14 cases of Atopy, 5 cases of Seizure followed by 2 cases of Hypothyroidism, 1 case of mental retardation 1 case of anemia, hepatosplenomegaly with thrombocytopenia and 1 case of Hyperthyroidism, short stature, Hepatosplenomegaly, Obesity with Acanthosis Nigricans. Sori et al have reported a case of pityriasis alba with chronic suppurative otitis media and upper respiratory tract infections; oculocutaneous albinism with atrial septal defect and nystagmus; 1 case of post inflammatory hypopigmentation (psoriasis) with dental caries; 2 cases of post inflammatory hypopigmentation (psoriasis) with enlarged tonsils; 1 case each of tuberous sclerosis complex and vitiligo had seizures, 1 case of nevus depigmentosus had microcephalus, 1 case of hypomelanosis of Ito had ambylopia[2].

The most common cause of post inflammatory hypopigmentation was Atopic Dermatitis seen in 11 cases each of (29%) followed by 4 cases each of (10%) Polymorphic Light Eruption, Trauma, Irritant contact Dermatitis, 3 cases each of (7%) Psoriasis, 2 Cases each of(5%)

Folliculitis and Burns, 1 Case each of (3%) Lichen Striatus, Miliria, Epi Dermo Lysis Bullosa simples, Pityriasis Lichenoid Chronica, Fungal, Pityriasis Rubra Pilaris, Lichen Niditus.In this current study, Wood's lamp examination of all vitiligo and nevus depigmentosus cases showed accentuation of the lesion, whereas in nevus anemicus, there was no accentuation. There was coppery orange fluorescence in cases of pityriasis versicolor. Malassezia furfur emits a yellowish-white or copper-orange fluorescence[12].Due to the abrupt cut-off in the visible emission from lesional skin, the margins of hypopigmented or depigmented spots appear sharper under Wood's light. The lesions appear bright blue-white due to autofluorescence. Wood's lamp is therefore helpful in making a diagnosis of vitiligo and particularly differentiating it from pityriasis alba, leprosy and post-inflammatory hypopigmentation or for identifying evolving lesion in a fair skinned person. Nevus depigmentosus can be differentiated from nevus anemic the latter does not show accentuation with Wood's light[13].

Conclusion

The study concludes by stating that The most common hypopigmentary disorders are pityriasis alba, Pityriasis Vericolor, vitiligo, post inflammatory, Primary disorders of hypopigmentation and Hansens. Leprosy is one of the common causes of hypopigmentation in India as leprosy is endemic in India. Vitiligo or Hansen's disease has to be ruled out to alleviate parents anxiety. Hypopigmentary disorders may be associated with other cutaneous or systemic involvement. The most common primary disorders of hypopigmentation are hypomelanosis of Ito, nevus depigmentosus, Piebaldism, Nevus Anemicus, dyschromatosus universalis hereditaria, halo nevus and tuberous sclerosis complex. Pityriasis alba is found almost entirely in preadolescent children. In most instances, the lesions clear at puberty, however persistence into adulthood has been reported. They usually present as well defined or ill-defined, hypopigmented macules with fine superficial scaling. The most common type of vitiligo seen in children is vitiligovulgaris, followed by segmental, focal, acrofacial and mucosal vitiligo.

Post inflammatory hypopigmentation is an important cause of hypopigmentary disorders in children. Wood's lamp examination is effective in differentiating vitiligo from other disorders of hypopigmentation.

Acknowledgement

Authors acknowledge the immense help received from the scholars whose articles are cited and included in references of this manuscript. The authors are also grateful to authors / editors / publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed.

Reference

1. Tukaram Sori, AmiyaKumarNath, DevinderMohan Thappa. Indian J Dermatol. 2011; 56(5): 546–549.
2. Sori T, Nath AK, Thappa DM, Jaisankar TJ. Hypopigmentary disorders in children in South India. Indian J Dermatol. 2011; 56 (5): 546-549.
3. Stanton BF, Behrman RE. Overview of Pediatrics. In: Kleigman RM, Bonita, Stanton, Geme J, Schor N,Behrman RE, editor. Nelson Textbook of Pediatrics, 19th ed. Philadelphia: Elsevier; 2012. P.1.
4. Soni B, Raghavendra K R, Yadav DK, Kumawat P, Singhal A. A clinico-epidemiological study of hypopigmented and depigmented lesions in children and adolescent age group in Hadotiregion (South East Rajasthan). Indian J Paediatr Dermatol 2017;18:9-13.
5. Vinod, Sujatha & Singh, Gurcharan & Grover, Sanjiv. Clinico-epidemiological study of pityriasis alba. Indian journal of dermatology, venereology and leprology.2001; 68. 338-40.
6. Jaisankar TJ, Baruah MC, Garg BR. Vitiligo in children. Int J Dermatol. 1992;31:621–3.
7. Handa S, Dogra S. Epidemiology of childhood vitiligo: A study of 625 patients from north India. Pediatr Dermatol 2003; 20: 207-10.
8. Mazereeuw- Hautier J, Bezio S, Mahe E, Bodemer C, Eschard C, Viseux V, et al. Segmental and non segmental childhood vitiligo has distinct clinical characteristics: A prospective observational study. J Am Acad Dermatol 2010; 62: 945-49.
9. Jain M, Jain SK, Kumar R, Mehta P, Banjara N, Kalwaniya S. Clinical profile of childhoodvitiligo patients in Hadoti region in Rajasthan. Indian J Paediatr Dermatol 2014;15:20-3.
10. Singal A, Sonthalia S, Pandhi D. Childhood leprosy in a tertiary care hospital in Delhi, India: A reappraisal in the post-elimination era. Lepr Rev (2011) 82, 259-269.
11. Sudip Kumar Ghosh,Sunil Kumar Dey, Indranil Saha, Jayasree Nath Barbhuiya, Arghyaprasun Ghosh and Aloke Kumar Roy : Pityriasis versicolor: a clinicomycological and epidemiological study from a tertiary care hospital - Indian J Dermatol. 2008; 53(4): 182–185.
12. Dhar S, Dutta P, Malakar R. Pigmentary disorders. In: Valia RG, Valia AR, editors. IADVL Textbook of Dermatology, 3rd ed. Mumbai: Bhalani Publishing House; 2008. p.736-60.
13. Daniel RH, Hubler WR, Wolf JE, Holder WR. Nevus anemicus: donor dominant defect. Arch Dermatol 1977; 113:53-6.