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Clinico-epidemiological profile of childhood vitiligo: Experience from a tertiary care center of Northeast India

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ABSTRACT

Background: Vitiligo is a common acquired skin disease characterized by depigmented macules and patches due to loss of functional melanocytes. Childhood-onset vitiligo has distinct epidemiological and clinical characteristics as compared to that of late-onset disease. Studies on childhood vitiligo are rare from the North-eastern part of the country. **Aims and Objectives:** The aim of the study was to study the clinical pattern of childhood vitiligo and its systemic association. **Materials and Methods:** All children up to 13 years presenting with childhood vitiligo were taken as study participants. A detailed history, general physical examination, cutaneous examination including hair, nail, genitalia, mucosae, and systemic examination to note down associated diseases was done. Relevant investigations were carried out whenever necessary. Eye and ear examination was performed for each patient. The findings were recorded in a pro forma for analysis and interpretation of data. **Results:** A total of 2544 pediatric patients attended the dermatology outpatient department during the study period, of which 52 cases had vitiligo. Thus, the occurrence of childhood vitiligo in the outpatient pediatric population was 2.04%. The most common age group at presentation was between 5 and 10 years (29; 55.77%). The most common initial site of involvement was head and neck (27; 51.92%). Vitiligo vulgaris was the most common type seen in 26 (50%) patients. A positive family history of vitiligo was obtained in 10 (19.23%) of the vitiligo patients. Seven (13.46%) childhood vitiligo patients were reported to have other associated diseases. **Conclusion:** Childhood vitiligo is a common entity in this part of the country. Most patients of childhood vitiligo have a limited body surface area involvement and therefore have to be treated accordingly; avoiding systemic treatments whenever not necessary. Autoimmune and cutaneous associations are rare in childhood vitiligo, though may develop later on, lest the disease progresses.

Key words: Cutaneous; Pediatric; Vitiligo

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INTRODUCTION

Vitiligo is a common acquired skin disease characterized by depigmented macules and patches due to loss of functional melanocytes.[1] The most important aspects of vitiligo are the cosmetic concern it arouses in the psyche of the patients and their family members because of the stigma associated with it. Childhood-onset vitiligo has distinct epidemiological and clinical characteristics as compared to that of late-onset disease. In 50% of the cases of vitiligo the disease onset is before 20 years of age and in 25% of the cases it starts before the age of 10 years.[2] Its prevalence in the world is around 0.1–2% and in India it is about 0.5–2.5%.[3]

The course of childhood vitiligo is mostly stable or regressive and only in few cases the disease become progressive or recurrent.[4] Complete spontaneous repigmentation is unusual. However, as compared to adults the rate of spontaneous repigmentation is more in children, especially in tropical countries and during summer months.[5]

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It is seen that studies on childhood vitiligo are rare from this part of the country. Therefore, a detailed clinical study will help dermatologists understand better the disease profile in children of this part of the country and thereby manage appropriately. Thus, this study was undertaken with the objective of studying the clinical pattern and the systemic association of childhood vitiligo in the northeastern part of India.

Aims and objectives

The aim of the study was to study the clinical pattern of childhood vitiligo and its systemic association.

MATERIALS AND METHODS

This prospective observational study was conducted in the Outpatient department of Dermatology department, Assam Medical College and Hospital, Dibrugarh, Assam, for a period of 1 year. The study was conducted after getting approval from the Institutional Ethics Committee. All patients up to 13 years presenting with childhood vitiligo attending the dermatology outpatient department were included in the study. Proper informed consent was taken from the patients before including in the study. A detailed history of patients was taken and recorded in a pro forma. A thorough general physical examination, cutaneous examination including nail, hair, genitalia, mucosae, and systemic examination to note down associated diseases was done.

Routine hematological investigations such as estimation of hemoglobin, total count, differential count, erythrocyte sedimentation rate, urine examination, liver function test, and renal function test were carried out for each patient. Relevant investigations such as thyroid function test, fasting blood glucose, and post-prandial blood glucose were also done when required. Eye examination and otorhinolaryngology examinations were performed for each patient.

The results of the study were tabulated, diagrammatically represented, analyzed, and discussed.

Statistical analysis

Simple proportions and percentages for comparing different variables such as age and sex were used. The findings were recorded in a pro forma for analysis and interpretation of data. Final outcome was expressed as the percentage of childhood vitiligo among the study group as a whole and as the percentage of individual childhood vitiligo.

RESULTS

A total of 2544 pediatric patients attended the dermatology outpatient department during our study period, of which 52 cases had vitiligo. Thus, the occurrence of childhood vitiligo in our outpatient pediatric population was 2.04%. Girls (32; 61.54%) outnumbered boys (20; 38.46%) with a ratio of 1.6:1.

The age distribution of childhood vitiligo at presentation and their age of onset is shown in (Table 1). The most common age group at presentation was between 5 and 10 years (29; 55.77%). The youngest child was 2 years and the oldest child was 13 years old. The mean age at first visit was 8.33±3.14 years. The most common age of onset was in the age group of 5–10 years (41; 78.85%). The mean age of onset was 6.77±2.36 years. In 41 (78.85%) patients, the duration of the disease was less than 5 years while 11 (21.15%) patients reported a disease history of more than 5 years. The mean duration of disease at presentation was 2.1 years.

Figure 1 shows the distribution of the lesions. Face was the most common site of involvement (25; 48.08%), followed by lower limbs (18; 34.62%) and trunk (17; 32.69%).

The various characteristics of the patients with vitiligo are shown in Table 2. Vitiligo vulgaris was the most common type seen in 26 (50%) patients, followed by focal (14; 26.92%), mucosal (6; 11.54%), segmental (4; 7.69%), and acrofacial (2; 3.85%). None of them presented with vitiligo universalis. The disease was found to be stable in 21 (40.38%) patients while 31 (59.62%) patients showed a progressive disease.

Table 1: Distribution of age at presentation and at the onset of disease

Age group (in years)	At presentation		At onset of disease	
	Number (n)	Percentage	Number (n)	Percentage
<5	5	9.62	8	15.38
5–10	29	55.77	41	78.85
>10–13	18	34.62	3	5.77
Total	52	100.00	52	100.00

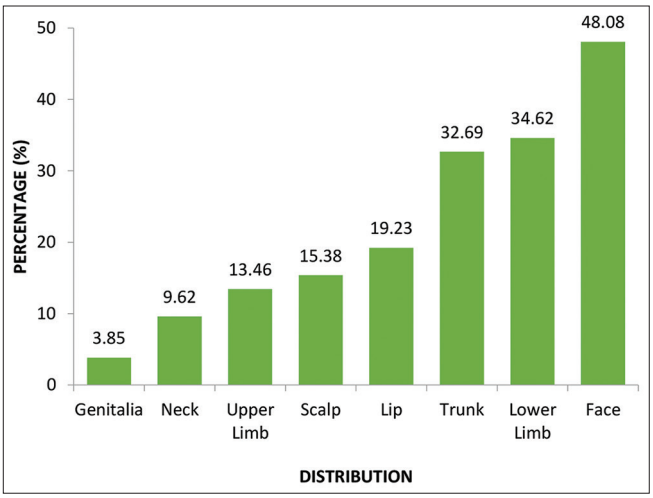

Figure 1: Distribution of lesion

Table 2: Characteristics of the patients

Characteristics	Number (n)	Percentage
Types of Vitiligo		
Vitiligo vulgaris	26	50.00
Focal	14	26.92
Mucosal	6	11.54
Segmental	4	7.69
Acrofacial	2	3.85
Universalis	0	0.00
Activity		
Progressive	31	59.62
Stable	21	40.38
Triggering/precipitating factor		
Trauma/injury	9	17.31
Foot wear	3	5.77
Emotional stress	1	1.92
Chemical	2	3.85
None	37	71.15
Family history		
Present	10	19.23
1st Degree	6	11.54
2nd Degree	3	5.77
3rd Degree	1	1.92
Absent	42	80.77
Koebner phenomenon		
Present	10	19.23
Absent	42	80.77
Leukotrichia		
Present	8	15.38
Absent	44	84.62
Ocular defect		5.77
Present	3	94.23
Absent	49	
Associated disease		
Halo Nevi	2	3.85
Alopecia Areata	1	1.92
Atopic Dermatatis	2	3.85
Psoriasis	1	1.92
Hypothyroidism	1	1.92

Trauma/injury was the most common triggering/precipitating factor, noted in 9 (17.31%) patients followed by footwear in 3 (5.77%), chemical in 2 (3.85%), and emotional stress in 1 (1.92%) patient. All our patients had <20% body surface area (BSA) involvement while 36 (69.23%) of them had <5% BSA involvement.

A positive family history of vitiligo was obtained in 10 (19.23%) of the vitiligo patients. Six (11.54%) patients had an affected first degree relative, 3 (5.77%) had an affected second degree relative, and 1 (1.92%) had an affected third degree relative.

Koebner's phenomenon was found to be present in 10 (19.23%) patients while 8 (15.38%) patients had leukotrichia. There were 3 (5.76%) patients who had ocular defects and among them 2 (3.84%) had eyelid vitiligo and l (1.92%) patient had iris depigmentation.

In our study, 7 (13.46%) childhood vitiligo patients were reported to have other associated diseases. Among them 2 (3.85%) had halo nevi, 2 (3.85%) had atopic dermatitis, and 1 (1.92%) patient each had alopecia areata, psoriasis, and hypothyroidism.

DISCUSSION

The occurrence of childhood vitiligo in our outpatient patients was 2.04% similar to a study on childhood vitiligo, from Southern India, which reported a prevalence of 2.6%.[6] Cho et al.,[7] reported that among all the Korean vitiligo patients, 16% comprised children. Handa and Dogra[8] reported a 23.3% prevalence of childhood vitiligo among all vitiligo patients in their study from Northern India while Hu et al.,[9] in their study from China reported the prevalence of childhood vitiligo to be 24.1%.

Our study showed a female predominance (61.54%) similar to most other studies. This higher incidence in females may be attributed to early medical help by parents in view of cosmetically disfiguring nature of the disease. However, males and females were equally affected in studies by Cho et al.,[7] and Hu et al.[9]

The most common age group of presentation was 5–10 years with a mean age of 8.83±3.14 years in our study which is similar to the study by Hu et al.,[9] and Raju and Nagaraju[10] where the mean age at presentation was 8.8 years and 8 years, respectively. In our study, the commonest age group at which depigmentation initiated in both males and females was between 5 and 10 years, constituting 78.85% of the cases similar to Handa and Dogra[8] where 50% of the cases had onset of the disease between 4 and 8 years of age. The mean age of onset in our study was 6.77±2.36 years with patients ranging from 2 to 13 years of age, as in other studies by Handa and Dogra.,[8] (6.2 years), Cho et al.,[7] (5.6 years), Hu et al.,[9] (7.28 years), Agarwal et al.,[11] (6.9 years), Sheth et al.,[12] (8.92 years), and Raju and Nagaraju[10] (6.8 years). Hafi et al.,[13] in their study from Northeast India, recorded a higher mean age of onset, that is, 10.3±4.9 years.

The duration of disease at presentation in the present study range from 1 month to 8 years with a mean duration of 2.1 years; similar to most other studies. Agarwal et al.,[11] reported that the duration of the disease at the time of presentation varied from 1 month to 10 years, with a mean duration of 18.6 months. Sheth et al.,[12] reported mean duration of disease to be 1.36 years ranging from 2 months to 8 years. Hu et al.,[9] reported the mean duration of the disease to be 1.6 years in Chinese patients.

Head and neck area was the most common site of onset in our study as was reported by many other studies in

literature.[4,7,8,10,13] However, Jaisanker et al.,[6] reported the lower limbs to be the most common site of onset.

Vitiligo vulgaris was the most common morphological type noted in 50% of the patients followed by focal vitiligo (26.92%) corroborating other studies.[6,10,12,14] However, Handa and Dogra[8] reported a much higher incidence of vitiligo vulgaris, that is, 78.4%. Our study witnessed segmental vitiligo in 7.69% of the patients. Raju and Nagaraju[10] noted segmental type to be the second most common in 27% of the patients. We noted acrofacial vitiligo in 3.85% patients while Jain et al.,[14] reported acrofacial vitiligo in 2.8% patients. However, acrofacial type of vitiligo (38.1%) was observed to be the most common clinical type in children, followed by vitiligo vulgaris (27.2%), segmental vitiligo (16.8%), focal vitiligo (16.8%), and mucosal vitiligo (1.1%) by Agarwal et al.[11]

The most common precipitating factor in the present study was trauma (17.31%). Raju and Nagaraju[10] too noted trauma as the most common precipitating factor in 6.6% patients. However, Kayal et al.,[15] reported trauma as the precipitating factor in a much higher number of patients, that is, 39.45%.

In all of our study patients, BSA involvement was <20% and majority of them (69.23%) had <5% BSA involvement. Handa and Dogra[8] reported <20% of BSA involvement in 96.4% and most of them (86.7%) had <5% BSA involvement. Raju and Nagaraju[10] also reported a BSA involvement of <20% in 85.6% of children and majority of them (74.9%) had <5% BSA involvement. Both the studies are in accordance with our study. In another Indian study by Jain et al.,[14] 74.28% patients had <5% BSA involvement and 25.71% patients had 5–20% BSA involvement.

Familial association was seen in 19.23% patients in our study; similar to many other studies. However, Jaisanker et al.,[6] reported a much less familial association in only 3.3% of the patients. Among those with a positive family history in our study, it was found that first-degree relatives were affected more than the second-degree relatives whereas Handa and Dogra[8] reported that second-degree relatives were affected more than first-degree ones. Sheth et al.,[12] too reported a higher incidence in the second-degree relatives. Pajvani et al.,[4] reported that children with vitiligo and with a positive family history of vitiligo were more likely to have an earlier age of onset of the disease than those with a negative family history.

Koebner's phenomenon was found to be positive in 19.23% of our childhood vitiligo patients. Similar occurrence of koebner's phenomenon was reported by Agarwal et al.,[11] (24.3%), Sheth et al.,[12] (21%), and Raju and Nagaraju[10] (24.6%). A lesser occurrence was reported by Handa and Dogra,[8] in 11% and Hafi et al.,[13] in 8.5% patients whereas Jain et al.,[11] reported a much higher occurrence in 34.2% patients.

In our study, 15.38% patients had leukotrichia. A similar observation was made by Handa and Dogra[8] who reported leukotrichia in 12.3% patients. Leukotrichia was found to have a higher occurrence in studies by Agarwal et al.,[11] in 24.3% patients, Jain et al.,[14] in 34.32% patients, Sheth et al.,[12] in 25% patients, and Raju and Nagaraju[10] in 41.8% of childhood vitiligo patients. Only 4.4% childhood vitiligo patients were reported to have leukotrichia in the study by Jaisanker et al.,[6] and in 9% patients in the study by Hafi et al.[13]

Our study reported the presence of halo nevi in 3.85% of the childhood vitiligo patients while Sheth et al.,[12] in 3% patients and Handa and Dogra[8] in 4.4% patients which was somewhat similar to our study. Jain et al.,[14] reported halo nevi in 8.56% childhood vitiligo patients while none of the patients were found to have halo nevi in the studies conducted by Jaisanker et al.,[6] and Agarwal et al.[11]

Atopic dermatitis was noted in 3.85% of our childhood vitiligo patients. Jain et al.,[14] reported that 2.8% patients had atopic dermatitis while Raju and Nagaraju[10] reported it in 3.3% patients. 1.92% childhood vitiligo patients had alopecia areata similar to Sheth et al.,[12] and Raju and Nagaraju[10] who reported that 1% and 2.2% patients had alopecia areata respectively. Among other autoimmune association Handa and Dogra[8] reported one patient with hypothyroidism. Our study too had one patient with hypothyroidism.

Ocular pigmentary abnormalities have been reported in 40% vitiligo patients of all age groups.[16] Eyelid depigmention, poliosis of the eyebrows and eyelashes though commonly seen in vitiligo is found to be rare in childhood vitiligo. Ocular involvement was reported in 5.76% of the patients of childhood vitiligo in our study which included eyelid vitiligo (3.84%) and iris depigmentation (1.92%). In an old study of childhood vitiligo, few children exhibited some type of ocular findings but, none of them could be attributed specifically to vitiligo.[17] Al-Mutairi et al.,[18] in their study of childhood vitiligo did not report any patient with ocular abnormality. Raju and Nagaraju[10] reported periocular depigmentation in 21.1% patients and iris depigmentation in 1.1% patients.

Limitations of the study

Long-term studies with a larger sample size will further help in better understanding of childhood vitiligo and to note the differences in clinical findings from the adult-onset form.

CONCLUSION

Childhood vitiligo is a common entity in this part of the country with certain differences from the adult-onset form.

Unlike the adult form, female preponderance noted in childhood vitiligo is most probably due to the concerned and anxious parents of young girls as it is still considered a stigma in our society. It is well established that most patients of childhood vitiligo have a limited BSA involvement and therefore has to be treated accordingly; avoiding systemic treatments whenever not necessary. Thus, vitiligo universalis is extremely rare in the childhood onset form. Segmental type is somewhat common than in the adult variant although vitiligo vulgaris and focal type were the most common morphological variants seen in children in our study. Trauma is a common precipitating factor often attributed to the playful nature of children. A positive family history is common in childhood vitiligo mostly with an earlier onset of the disease. Autoimmune and cutaneous associations are rare in childhood vitiligo, though may develop later on, lest the disease progresses. Ocular abnormalities are also rare unlike the adult-onset form.

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Author's Contribution:
SM- Concept and design of the study, data collection, Interpreted the results; **BS-** Preparation and revision of the manuscript; **AS-** Statistical analysis and interpretation; **PA-** Concept, coordination.

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