

Vitiligo in Children: A Distinct Subset

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ABSTRACT

Objective: To determine clinical profile of vitiligo in children.

Study Design: A descriptive study.

Place and Duration of Study: Combined Military Hospital, Abbottabad, from January 2010 to June 2013.

Methodology: All new patients below the age of 15 years, clinically diagnosed to have vitiligo, were included in the study. A detailed history was obtained, thorough physical examination was performed, and findings were recorded on a specially designed proforma for each patient separately. Computer programme SPSS-14 was used to manage and analyze the data.

Results: Out of 157 children, 68 (43.3%) were males and 89 (56.7%) were females. Mean age at onset was 6.55 ± 3.43 years. The disease started before 10 years of age in 123 (78.3%) children. Average duration of the disease was 1.48 ± 1.87 years. Average duration of the disease was 1.73 ± 2.09 years in male children and 1.29 ± 1.67 years in female children. Generalized vitiligo was the commonest type ($n = 83$, 52.9%). The disease started most commonly from head and neck ($n = 75$, 47.8%). A family history of vitiligo was found in forty-nine (31.2%) children, Koebner phenomenon in 39 (24.8%) children and associated autoimmune or endocrine diseases in 8 (5.1%) patients.

Conclusion: Majority of the children developed the disease before 10 years of age. Generalized vitiligo was the commonest type. Childhood vitiligo was more common in female children.

Key Words: *Clinical profile. Vitiligo. Children. Pakistan.*

INTRODUCTION

Vitiligo is a common depigmenting skin disorder, characterized by acquired, idiopathic, progressive, circumscribed hypomelanosis of the skin and hair, with total absence of melanocytes microscopically.^{1,2} The prevalence of the disease is around 1% in the United States and Europe, but ranges from less than 0.1% to greater than 8% worldwide.³ Depending on the pattern of skin lesions, which are sharply demarcated white macules and the extent of involvement, vitiligo is divided into different types. The most characteristic types include generalized vitiligo, focal vitiligo, acral vitiligo, acrofacial vitiligo, segmental vitiligo and vitiligo universalis.¹⁻⁸ The segmental type of vitiligo is more often seen in children, as it starts generally earlier in life than the non-segmental one.¹⁻⁸ The diagnosis of vitiligo is essentially based on clinical examination because the lesions have a typical appearance. Vitiligo is primarily a disease of the young; in about half of patients, it occurs before the age of 20 and in about 25% of the cases, it starts before the age of 10 years.^{6,7} Childhood vitiligo differs from adult vitiligo in many clinical parameters.⁶

Recently, a number of reports have been published worldwide to describe the clinical profile of childhood

vitiligo,⁶⁻¹⁰ but there is paucity of such reports in Pakistani population. The purpose of this study was to determine the clinical profile of childhood vitiligo in Pakistani patients presenting to Combined Military Hospital, Abbottabad.

METHODOLOGY

The study was conducted at the Combined Military Hospital, Abbottabad from January 2010 to June 2013. Patients of either gender up to the age of 15 years with clinical diagnosis of vitiligo, reporting to dermatology department, were included in the study, after taking an informed consent.

All patients with history of depigmented patches observed since birth, were excluded. Acquired depigmented patches, due to physical trauma, chemical injury, burns, nutritional deficiency, inflammatory dermatoses, and drugs, were also excluded. The study was approved by the Ethical and Scientific Committee of the Hospital. Clinical findings of each patient were recorded separately on a specially designed proforma. Diagnosis was based on the findings of acquired, well-demarcated white lesions on the skin with no associated inflammation. Wood's lamp examination was carried out to substantiate the diagnosis. Each patient was interviewed in detail and a thorough physical examination performed to determine the age, gender, age at onset, duration of disease at presentation, the clinical type of vitiligo, family history, site where vitiliginous lesion appeared first, presence or absence of Koebner phenomenon and the presence of other associated diseases. Vitiligo was characterized

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according to the extent of involvement and pattern of depigmentation into various types. Lesions confined to one or a few patches localized in a particular area were grouped as focal vitiligo, lesions distributed in a segmental/dermatomal pattern as segmental vitiligo, lesions affecting acral regions as acral vitiligo, lesions noted over both face and acral regions as acrofacial vitiligo, lesions affecting many parts of the body as vitiligo vulgaris or generalized vitiligo, and extensive lesions with only a few visible normally pigmented patches as vitiligo universalis.

Computer program SPSS-14 was used to manage and analyze the data. Frequencies and percentages were calculated for categorical variables while mean and standard deviations were calculated for numerical variables.

RESULTS

One hundred and fifty-seven children (aged 4 months to 15 years) with clinical diagnosis of vitiligo were evaluated; 68 (43.3%) were males and 89 (56.7%) were females. The male to female ratio was 1:1.3. The mean age at first visit was 7.98 ± 3.63 years and mean age at onset of the disease was 6.55 ± 3.43 years (Table I). Age at the onset of the disease ranged from 15 days to 14 years. Mean age at onset in male children was 6.53 ± 3.68 years (ranging from 2 months to 14 years); and 6.56 ± 3.25 years (ranging from 15 days to 13 years) in female children. The disease started before 5 years of

age in 52 (33.1%) children, between 5 and 10 years of age in 71 (45.2%), and after 10 years of age but before 15 years of age in 34 (21.7%) children. In 123 (78.3%) children, vitiligo started before the age of 10 years. The average duration of disease at presentation was 1.48 ± 1.87 years (Table II).

Generalized vitiligo was the commonest type ($n=83$, 52.9%), followed by focal ($n=42$, 26.8%), segmental ($n=20$, 12.7%), acrofacial ($n=7$, 4.5%), acral ($n=3$, 1.9%) and vitiligo universalis ($n=2$, 1.3%) in descending order of frequency (Table I). The disease started most commonly from head and neck ($n=75$, 47.8%), followed by lower extremities. In patients with focal vitiligo, the disease started from head and neck in 23 (69.0%) patients (Table II).

A family history of vitiligo was found in 49 (31.2%) children (Table II). Out of 49 children with positive family history, 11 (22.4%) children had first-degree relatives, 25 (51.0%) had second-degree relatives and 4 (8.2%) children had third-degree relatives with vitiligo. Nine (18.4%) children had distant relative with vitiligo. Mean age of onset of vitiligo in children with positive family history was 6.389 ± 3.398 years and in children with a negative family history was 6.627 ± 3.469 years. Out of 49 children with positive family history, the disease started from head and neck in 21 (42.9%), from upper limbs in 4 (8.2%), from lower limbs in 16 (32.7%), from genitalia in 2 (4.1%), and trunk in 6 (12.2%).

Table I: Age at onset of vitiligo.

Type of vitiligo	Gender	Number of patients (% within type for gender and % of total patients for a particular type)	Mean age at onset (years)	Std. Deviation	Onset before age 5 years (% within Onset age group for gender and % of total patients for a particular type)	Onset between age 5 to 10 years (% within Onset age group for gender and % of total patients for a particular type)	Onset after 10 years of age but before 15 years of age (% within Onset age group for gender and % of total patients for a particular type)
Generalized	Male	35 (42.2%)	7.59	3.32	7 (20.0%)	18 (51.4%)	10 (28.6%)
	Female	48 (57.8%)	6.36	2.91	16 (33.3%)	25 (52.1%)	7 (14.6%)
	Total	83 (52.9%)	6.88	3.13	23 (27.7%)	43 (51.8%)	17 (20.5%)
Focal	Male	15 (35.7%)	5.99	4.01	7 (46.7%)	5 (33.3%)	3 (20.0%)
	Female	27 (64.3%)	6.64	3.95	9 (33.3%)	10 (37.0%)	8 (29.6%)
	Total	42 (26.8%)	6.41	3.93	16 (38.1%)	15 (35.7%)	11 (26.2%)
Acrofacial	Male	4 (57.1%)	2.86	2.57	3 (75.0%)	1 (25.0%)	0
	Female	3 (42.9%)	7.33	4.19	1 (33.3%)	1 (33.3%)	1 (33.3%)
	Total	7 (4.5%)	4.77	3.86	4 (57.1%)	2 (28.6%)	1 (14.3%)
Segmental	Male	11 (55.0%)	5.15	3.93	7 (63.6%)	2 (18.2%)	2 (18.2%)
	Female	9 (45.0%)	7.53	3.13	1 (11.1%)	6 (66.7%)	2 (22.2%)
	Total	20 (12.7%)	6.22	3.71	8 (40.0%)	8 (40.0%)	4 (20.0%)
Universalis	Male	1 (50.0%)	-	.	0	1 (100.0%)	0
	Female	1 (50.0%)	-	.	0	1 (100.0%)	0
	Total	2 (1.3%)	6.00	1.41	0	2 (100%)	0
Acral	Male	2 (66.7%)	7.00	4.24	1 (50.0%)	0	1 (50.0%)
	Female	1 (33.3%)	-	-	0	1 (100%)	0
	Total	3 (1.9%)	6.33	3.21	1 (33.3%)	1 (33.3%)	1 (33.3%)
Total	Male	68 (43.3%)	6.54	3.69	25 (37.8%)	27 (38.7%)	16 (23.5%)
	Female	89 (56.7%)	6.57	3.26	27 (30.3%)	44 (49.4%)	18 (20.2%)
	Total	157 (100%)	6.55	3.44	52 (33.1%)	71 (45.2%)	34 (21.7%)

Table II: Types of vitiligo and their characteristics.

Type	N	Average duration (Years)	Site of onset					Positive family history (% within type)	Positive Koebner	Associated diseases
			Head neck	Upper limbs	Lower limbs	Genitalia	Trunk			
Generalized	83 (52.9%)	1.784 ±1.958	33 (39.8%)	5 (6.0%)	33 (39.8%)	1 (1.2%)	11 (13.3%)	29 (34.9%)	37 (44.6%)	5 (6.0%)
Focal	42 (26.8%)	0.648 ±0.927	29 (69%)	2 (4.8%)	4 (9.5%)	3 (7.1%)	4 (9.5%)	10 (23.8%)	Nil	3 (7.1%)
Segmental	20 (12.7%)	1.422 ±2.245	10 (50.0%)	4 (20%)	4 (20.0%)	1 (5.0%)	1 (5.0%)	3 (15.0%)	Nil	Nil
Acrofacial	7 (4.5%)	1.988 ±1.926	3 (42.9%)	1 (14.3%)	2 (28.6%)	Nil	1 (14.3%)	4 (57.1%)	1 (14.3 %)	Nil
Universalis	2 (1.3%)	4.500 ±3.536	Nil	Nil	1 (50.0%)	Nil	1 (50.0%)	2 (100%)	Nil	Nil
Acral	3 (1.9%)	2.347 ±2.058	Nil	Nil	3 (100 %)	Nil	Nil	1 (33.3%)	1 (33.3 %)	Nil
Total	157	1.489 ±1.874	75 (47.8%)	12 (7.6%)	47 (29.9%)	5 (3.2%)	18 (11.5%)	49 (31.2%)	39 (24.8%)	8 (5.1%)

Koebner phenomenon was observed in 39 (24.8%) patients. It was observed most frequently in patients with generalized vitiligo, and more frequently in children in whom the disease started from lower extremities (n=19, 48.7%) followed by head and neck (n=13, 33.3%). It was found in 17 (43.6%) children with positive family history and in 22 (56.4%) children with negative family history.

Eight (5.1%) children had associated autoimmune diseases. Associated diseases were more common in patients with generalized vitiligo (Table II). Associated diseases like alopecia areata and halo nevus were found in 2 patients and atopic dermatitis, leukotrichia and premature graying of hair in one patient.

DISCUSSION

Vitiligo is a multifactorial polygenic disorder with a complex pathogenesis.^{1,2,11} Many investigators now regard vitiligo as heterogeneous disease with multiple etiologies.⁷ Childhood vitiligo encompasses a unique subset of patients which differs from adult onset vitiligo in several features.⁶⁻¹⁰ A number of studies have described the clinical profile of childhood vitiligo.¹²⁻²¹ The clinical profile of childhood vitiligo in a group of Pakistani children has been described in this study.

In this study, the number of female children was found to be higher than males. Male to female ratio was 1:1.3. This was in accordance with most of the previous studies.^{8,10,12,13} Cho *et al.* and Hu *et al.* reported equal frequency in male and female children.^{16,20} None of the studies has shown male preponderance in children. Mean age of onset of vitiligo, as described in previous studies, ranged from 5.6 years to 7.28 years.^{16,17,20} In these patients, the mean age at onset of disease was around 6 years and 6 months, which is consistent with previous studies. About 33% children developed disease before 5 years of age, and 78.3% developed disease before 10 years of age. The average duration of disease at presentation was 17.86 months. Average duration of disease was shorter in these patients as compared to those of Hu *et al.*, who reported average duration of 19.71 months in children.²⁰ No other study has described the duration of disease at presentation in children. Shorter duration in these patients may be due to cosmetic concern in the studied population because

of darker skin complexion as compared to those of Chinese population which makes vitiligo and other leucodermas to be more prominent. The average duration of disease at presentation in male children was longer (20.9 months) as compared to female children (15.6 months). The possible reason for girls reporting early as compared to boys, may be a greater parental concern toward appearance in girls.

Vitiligo vulgaris (generalized vitiligo) was the most common type as reported previously by Handa *et al.*,¹⁸ Al-Mutairi *et al.*,¹⁹ and Hu *et al.*²⁰ Frequency of segmental vitiligo (n= 20, 12.7%) in children reported in this study was significantly higher as compared to that of (n=15, 6.5%) reported previously by us in adults (p < 0.05).⁵ Higher frequency of segmental vitiligo has been reported previously by Halder *et al.*,¹⁴ Cho *et al.*,¹⁶ Prcic *et al.*¹⁷ and Khalid *et al.*²¹

Vitiligo most commonly started from head and neck. Focal vitiligo started from head and neck in 69.0% of patients. In 12 (7.6%) children, the disease started from upper extremities which was less likely as compared to 34 (14.8%) reported previously in adults.⁵

In different series, a positive family history has been reported in children ranging from 11.1% to 27.3%.^{14,16,18,19,22} Positive family history of vitiligo was found in 49 (31.2%) children which was more common as compared to that reported previously.^{14,16,18,19,22} Previously, Khalid *et al.* reported a significantly increased incidence of a positive family history in children as compared to adults with vitiligo.²¹ No significant difference in mean age of onset of vitiligo in children with a positive family history and children with a negative family history was observed (p > 0.05). Previously, Pajvani *et al.*²³ reported that children with vitiligo and an extended family history of vitiligo were more likely to have an earlier age of onset of disease than those with a negative family history.

Khalid *et al.* reported a significantly increased frequency of the presence of Koebner phenomenon in children as compared to adults with vitiligo.²¹ Frequency of Koebner phenomenon in children in this study was 39 (24.8%). In a series reported by Handa *et al.*,¹⁸ Koebner phenomenon was observed in 11.3% of children with

vitiligo. Koebner phenomenon was found in 17 (34.7%) out of 49 children with positive family history and in 22 (20.4%) out of 108 children with negative family history. Koebner phenomenon was more commonly observed in 19 (48.7%) children with vitiligo starting from lower extremities as compared to each group of patients in whom the disease started from head and neck (n=13, 33.3%), upper limbs (n=1, 2.6%), genitalia (n=1, 2.6%) and trunk (n=5, 12.8%).

Associated autoimmune or endocrine diseases were less often found in children (n=8, 5.1%) with vitiligo. Associated diseases were more common in patients with vitiligo vulgaris in both groups. These results were consistent with those of Cho *et al.*¹⁶ and Prcic *et al.*¹⁷ Khalid *et al.*²¹ reported a significantly increased incidence of alopecia areata.

CONCLUSION

Childhood vitiligo was more common in female children in this series. Majority of the children developed the disease before 10 years of age. Generalized vitiligo was the most common clinical type with head and neck being the most common earliest site of affliction.

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