

Original Research Article

Clinical, epidemiological and autoimmune associations in childhood vitiligo in Qatar

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ABSTRACT

Background: Childhood vitiligo although clinically similar to adult onset vitiligo but it has distinct clinical, epidemiological and prognostic features compared to adult onset vitiligo.

Methods: This is a retrospective study that was carried out on 85 pediatric patients up to age of 18 years old with the diagnosis of vitiligo, where the clinical and epidemiological data including clinical type of vitiligo, family history of autoimmune diseases like thyroid disorders and diabetes mellitus and laboratory results including anti-thyroid peroxidase antibodies (anti-TPO antibodies), anti-parietal cell antibodies, antinuclear antibodies (ANA), Vitamin D and Vitamin B12 were retrieved from the files of these patients.

Results: The mean age of the children affected by vitiligo was 10.4 years, the mean age of onset of vitiligo was 5.4 years, 54 (63.5%) percent were girls and 31 (36.5%) were boys. A positive family history of vitiligo was found in 44.7% of the participants, family history of DM was found in 64.7% of patients and family history of thyroid disease was found in 32.9% of the participants. The prevalence of thyroid autoimmunity was found to be in 22.4% of total participants.

Conclusions: Childhood vitiligo has distinct clinical features, more common family history for autoimmune diseases and thyroid autoantibodies rather than overt clinical diseases, which raise the necessity to perform a routine initial immunological and thyroid screening in children with vitiligo and to repeat them at annual bases if there were abnormal values at base line or strong family history.

Keywords: Antithyroid peroxidase antibody, Childhood, Diabetes mellitus, Thyroid, Vitiligo

INTRODUCTION

Vitiligo is an acquired, sometimes familial pigmentary chronic disorder of skin and hair characterized by selective loss of melanocytes resulting in white spots and leukoderma. The etiology is unknown at this time; however, an autoimmune hypothesis is favored.¹ Fifty percent of patients develop vitiligo before the age of 20 years.² Childhood vitiligo although clinically similar to

adult onset vitiligo but it has distinct clinical, epidemiological features and autoimmune associations when compared to adult onset vitiligo. However, fewer reports have discussed the clinical and epidemiological features and autoimmune associations of childhood vitiligo, which is vitiligo occurring before the age of 12 years in most of the studies and up to the age of 18 years in others.^{1,3-13} In this study we provided clinical, epidemiological and autoimmune associations in

childhood vitiligo in State of Qatar up to the age of 18 years old.

METHODS

It was a retrospective study that was carried out to assess the clinical and epidemiological characteristics of childhood vitiligo in the state Qatar and detect possible autoimmune associations.

85 pediatric patients up to age of 18 years old with the diagnosis of vitiligo who attended the dermatology clinics of Rumailah, AL Khor and Al Wakrah hospitals, Hamad Medical Corporation, Qatar from March 2014 to March 2018 period were included in the study and clinical and epidemiological data including clinical type of vitiligo, family history of autoimmune diseases like thyroid disorders and diabetes mellitus and laboratory results including anti thyroidperoxidase (TPO) antibodies, anti-parietal cell antibodies, thyroid function test, ANA, Vitamin D and Vitamin B12 were retrieved from the files of all patients.

Statistical methods

For continuous numerical variables the mean and standard deviation were calculated. While for discrete numerical variables percentage and frequency were used. Tests were done using the SPSS package version 16. Period prevalence, number of existing patients positive for (anti-thyroid peroxidase antibodies, anti parietal cell antibodies, thyroid function test, ANA, Vitamin D and Vitamin B12) divided by the total number of samples at risk (85 cases) during the specified period of time.

RESULTS

A total of 85 pediatric patients with the diagnosis of vitiligo who had the required data in their files were included in the study.

Table 1: Demographic and clinical characteristics of pediatric vitiligo in Qatar (n=85).

Characteristic variable	Total
Number of females, male participants (%)	54 (63.5), 31 (36.5)
Mean age (years)	10.3
Mean age of onset of vitiligo (years)	5.4
Halo nevus (%)	5 (5.9)
Koebnerization (%)	41 (48.2)
Anti-parietal cell AB (%)	4 (4.7)
Anti-thyroid peroxidase AB (%)	19 (22.4)
ANA (%)	15 (17.6)
Vit D (%)	78 (91.7)
Vit B12 (%)	4 (4.7)
Family H/O vitiligo (%)	38 (44.7)
Family H/O DM (%)	55 (64.7)
Family H/O thyroid disease (%)	28 (32)

Table 2: Clinical types of pediatric vitiligo in Qatar.

	Frequency	Percentage
Clinical types (non-segmental, segmental)	71, 14	83.5, 16.5
Non-segmental types		
Acrofacial	3	3.5
Mucosal	3	3.5
Focal	25	29.4
Segmental	14	16.5
Universal	2	2.4
Vulgaris	38	44.7
Total	85	100.0

The demographic and clinical characteristics of the study are described in (Table 1 and 2).

The study group comprised of 54 girls (63.5%) and 31 boys (36.5%), making the female to male ratio (1.7:1). The mean age of the children affected by vitiligo was 10.4 years. The mean age of boys was (10.8±4.2) which was statistically insignificant compared to the mean age of girls (10.1±4.3, p>0.05), (Figure 1) and the mean age of Qatari children was 11.5 and the non-Qatari 9.2 (Figure 2).

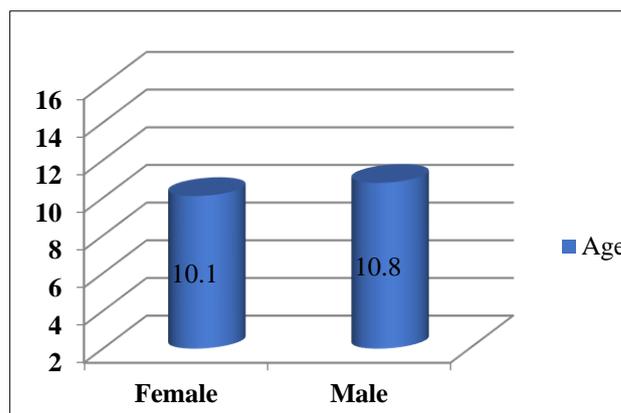


Figure 1: Mean age according to gender.

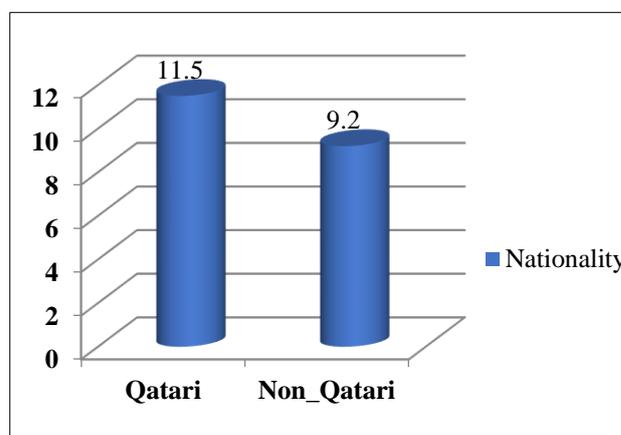


Figure 2: Mean age according to Nationality.

The mean age of onset of vitiligo was 5.4 years; the shortest age of onset was at the age of 1 year in only 6% of total children.

The commonest skin type affected by vitiligo was 4 (55%) and the least skin type was 1 (1.2%) (Figure 3).

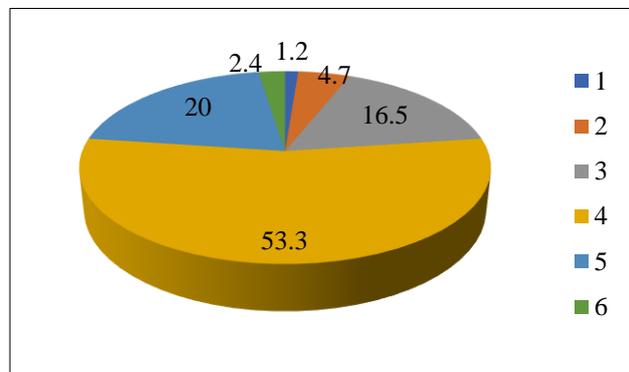


Figure 3: Skin type in percentage.

The prevalent clinical type of vitiligo was the non-segmental form in 71 patients (83.5%) and the segmental type was seen in 14 children (16.5 %) and within the non-segmental group vitiligo vulgaris was the most common type in 38 patients (44.7%), followed by focal type in 25 patients (29.4%), acrofacial in 3 patients (3.5%), mucosal in 3 patients (3.5%), and universalis in 2 patients (2.4%) as in table 2. 41 children (48.2%) had koebnerization, five patients of the whole sample had halo nevus (5.9%). The prevalence of thyroid autoimmunity in children with vitiligo (anti-TPO antibodies) was found to be in 22.4% of total participants, anti-nuclear antibodies in 17.6% and anti-parietal cell antibodies in 4.7%. The serum level of Vit D was significantly lowered in 91.8% of children with vitiligo in our study, serum level of Vit B12 was low in 4.7% of children. A positive family history of vitiligo was found in 44.7% of the participants. A family history of DM was found in 64.7% of patients. A positive family history of thyroid disease was found in 32.9% of the participants.

DISCUSSION

The mean age of onset of vitiligo in our study was 5.4 years, this was similar to Korean study where the mean age was 5.6 years, the mean age of onset in Indian literature is 6.2 years and 7.28 in Chinese study.^{4,5,7} Girls outnumbered boys, there were 54 girls (63.5%) and 31 boys (36.5%), making the female to male ratio (1.7:1), various literatures found female predominance in childhood vitiligo but Chinese study showed equal distribution between males and females, as from various literatures we think that this female predominance can be explained as an epidemiologic pattern that characterize the childhood vitiligo and it could be also attributed to the cosmetic disfigurement associated with the disease in darker skin types and anxiety of parents about their female daughters and their urge to seek early medical

advice and treatment as quick as possible and more wide scale studies are needed to confirm this female predominance as an epidemiologic pattern in childhood vitiligo.^{5,7,14,16} The commonest skin type affected by vitiligo in our study was skin type 4 (55%) and the least skin type was 1 (1.2%) and this may be due to the ethnic distribution of nationals and residents of Qatar.

A positive family history of vitiligo was found in 44.7% of the participants. Pajvani et al concluded significant higher incidence of vitiligo compared to controls, Gandhi et al also reported a positive family history of vitiligo in 22.5% of their patients and other studies reported similar associations ranging from 11% 7 to 46%, our increased percentage may be contributed to the small population in Qatar and consanguinity.^{6,8,17}

Regarding clinical types, in our study the prevalent clinical type of vitiligo was the non-segmental form in 71 patients (83.5%) and the segmental type was seen in 14 children (16.5 %) and within the non-segmental group vitiligo vulgaris was the most common type in 38 patients (44.7%), followed by focal type in 25 patients (29.4%), acrofacial in 3 patients (3.5%), mucosal in 3 patients (3.5%), and universalis in 2 patients (2.4%), this is in accordance this was in accordance with several studies.^{7,15,18-20}

41 children (48.2%) had koebner phenomenon which was a high percentage in relation to other studies where the percentage ranged from 10% up to 34%.^{15,18,20,21}

Halo nevi associated with NSV in (20.2%) as reported by Mazereeuw-Hautier et al and our percentage was 5.9%.¹³

A family history of DM was found in 64.7% of patients and this high percentage in relation to other studies may be due to the high prevalence of this disease in Qatar where the overall prevalence of diabetes mellitus among adult Qatari population was high (16.7%).^{6,22,23}

Vitamin D is a lipophilic hormone which deficiency is associated with autoimmune diseases however this association remains unclear, the prevalence of vitamin D deficiency was higher in the group of adult vitiligo patients; however, the difference was not statically relevant and larger controlled studies are needed to elucidate the relationship between vitamin D metabolism and vitiligo.²⁴ in our study in childhood vitiligo there was high prevalence of vitamin D deficiency in 91.7% of patients, this high prevalence was recorded earlier in a study which compared vitamin D deficiency in type 1 diabetes mellitus and healthy children, the study revealed that vitamin D deficiency was considerably higher in T1DM children (90.6%) compared to non-diabetic children (85.3%).²⁵ high prevalence of vitamin D deficiency in Qatar may be explained by the clothes worn by nationals and majority of residents which minimize the sun exposure together with indoor living environment.

Antinuclear antibodies were detected in 2 of the 55 (3.6%) only in the NSV patients, antinuclear antibodies may be found in children with vitiligo, but not in segmental forms.^{13,26} This is considered a marker of the general autoimmune status of the child with vitiligo, in our study the percentage of ANA was higher and detected in 17.6% of patients.²⁶

Children with vitiligo are reported to have lower rates of associated autoimmune and/or endocrine disorders, compared with adults.^{4,22,27} However, thyroid dysfunction may be subclinical in children.^{9,11} Furthermore, an increased incidence of autoantibodies without further evidence of disease has also been reported in children with vitiligo, compared with healthy children, which suggests the probability for autoimmune disease later in life.^{3,13} The same was observed in our study where no patients with overt thyroid dysfunction were recorded in the studied group but Anti-thyroid peroxidase AB were recorded in 22.4% of children with vitiligo which was in accordance with the findings of Kokourou et al and Prčić et al.^{11,28}

In clinical practice, it seems appropriate to perform a routine initial thyroid screening in children with vitiligo, which should include anti TPO antibodies and thyroid stimulating hormone determinations. If there is a strong family history of autoimmunity or in case of baseline detection of anti-TPO antibodies, repeated annual assessment and/or endocrinologic visits should be performed.²⁶

CONCLUSION

Childhood vitiligo is an important entity that differs from adult-onset vitiligo in several clinical features, more common family history for autoimmune diseases and thyroid autoantibodies rather than clinical diseases and this issue needs more studies in wider scale and raise the necessity to perform a routine initial immunological and thyroid screening in children with vitiligo, which should specially include anti TPO antibodies and thyroid stimulating hormone determinations and repeat them if there were abnormal values at base line or strong family history and this could be at annual bases together with endocrinologic visit that should be scheduled for them for early diagnosis of their diseases.

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