ORIGINAL ARTICLE

Different characteristics of early-onset vitiligo versus late-onset vitiligo

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Background: Vitiligo is an acquired disorder characterized by the selective destruction of melanocytes, culminating in white macules on the skin. It usually begins at an early age; however, late-onset vitiligo also may occur. The disease burden arising from the psychological effects, especially during childhood, highlights the importance of epidemiological studies of this disease and investigations of differences of disease features between early-onset and late-onset forms.

Methods: A total of 234 vitiligo patients were included in this study and divided into two groups considering the age of onset. The disease characteristics and clinicopathological features of the patients were obtained and compared using written questionnaires.

Results: Overall, 25.6% of patients were early-onset and the mean of age in this group was 18.86 years compared with 37.14 years in the late-onset group. The most frequent involvement sites for the early-onset and late-onset groups were the eyelid and hand, respectively. A significant difference was observed between the groups regarding thyroid disorder as a comorbid disease.

Conclusion: Marked differences in clinical features were present between patients with early-onset and late-onset vitiligo. Females were more prevalent in the early-onset group and the frequency of thyroid disorder was less relative to the late-onset group. Further studies with different age cut-offs for categorizing early and late-onset vitiligo seem necessary.

Keywords: vitiligo, thyroid, autoimmune disease

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INTRODUCTION

Vitiligo refers to an acquired pigmentary disorder caused by the selective destruction of melanocytes of the skin and hair [1,2]. Its prevalence ranges from 0.1% to 2% of the population worldwide without any sexual, regional, and racial predominance. As a cosmetic problem, the psychological health of patients should not be neglected [1,3]. There are four known patterns of presentation for vitiligo including common generalized, localized, acrofacial, and segmental disease [4]. Although the exact etiology is unknown, autoimmune factors are implicated in addition to neurogenic factors. Besides melanocyte self-destruction by melanin precursors, which are thought to participate in the pathogenesis of vitiligo, other factors including nitric oxide and oxidative stress may be involved [5-7]. Vitiligo usually begins in childhood and young adulthood where approximately 50% of patients start to present symptoms before the age of 20 years. With aging, the incidence of the disease decreases [8].

There is a paucity of published data discussing the epidemiology of both childhood and late-onset vitiligo. Considering the defective self-esteem of children and the significant psychological trauma associated with childhood vitiligo, learning about potential differences in clinical manifestations and outcomes and the epidemiology of this disease can lead to better patient management [1,8]. The present study aimed to compare vitiligo features and clinical manifestations between childhood and late-onset vitiligo.

METHODS AND MATERIAL

Study population

The present descriptive study included vitiligo patients referring to the Dermatology Department of Taleghani Hospital (Urmia, Iran) in 2016. A total of 234 vitiligo patients were examined by a dermatologist and diagnosed with vitiligo. The patient history was discussed and questionnaires were filled out. Patients with suspicious states and disorders other than vitiligo were excluded from the study. Patients were divided into two groups considering the age of onset. The first group was comprised of patients with onset before 12 years of age and the second group was patients with onset later than this cut-off point.

Clinical History

The age, gender, age of onset, familial history of vitiligo and thyroid disorders, personal history of thyroid disease, the first affected area, vitiligo form, and history of other diseases like atopy were parameters included in the questionnaire. These data were obtained and compared in both groups.

Statistical analysis

To assess relationships between the qualitative data, the Chi-squared test, Fisher's exact test, and Monte Carlo test were used. The independent t-test and Mann-Whitney U test were used to analyze quantitative data. All statistical analysis was conducted using SPSS V.21 and, in all tests, p-values less than 0.05 were considered statistically significant.

Ethical statement

The details of the study were explained to all patients and written informed consent was obtained from the participants. The protocol of the study was approved by the Ethics Committee of both Urmia University of Medical Sciences and Taleghani Hospital.

RESULTS

Out of 234 analyzed vitiligo patients, 60 (25.6%) had early-onset (before 12 years of age) and 174 (74.4%) had late-onset disease. In the first group, there were 15 (25%) males and 45 (75%) females. However, the late-onset group included 95 (54.6%) males and 79 (45.4%) females. This difference was statistically significant($p < 0.001$). In Table 1, the differences in clinical features between the two groups are summarized.

The mean age of patients in the early-onset group was 18.86 ± 14.56 years compared with 37.14 ± 13.39 years in the late-onset group; the mean age of onset was7.62 ± 2.85 and 30.58 ± 14.78 years, respectively. These differences between the two groups were statistically significant ($P < 0.001$).

In terms of the primary involvement site of the disease, the forehead (n = 2), hand (n = 4), eyelid (n = 21), forearm (n = 1), face (n = 2), calf (n = 10), trunk (n = 8), knee (n = 3), back of foot (n = 5), neck (n = 1), axilla (n = 1), arm (n = 1), and ankle (n = 1) were reported as in the early-onset group. For late-onset group these frequencies were as follows: forehead (n = 10), hand (n = 61), forearm (n = 5),

Table 1. Differences in clinical features between the two groups.

Group	Type of vitiligo (segmental/non-segmental) (n)	Presence of vitiligo (n)	Family history (n)
Early-onset	Segmental (7) Non-segmental (53)	Positive (3) Negative (57)	Positive (8) Negative (52)
Late-onset	Segmental (8) Non-segmental (166)	Positive (11) Negative (163)	Positive (39) Negative (135)
P- value	0.068	0.496	0.140

eyelid (n = 6), genitalia (n = 10), face (n = 10), calf (n = 14), trunk (n = 26), knee (n = 4), back of foot (n = 1), thigh (n = 6), scalp (n = 2), lips (n = 2), neck (n = 7), axilla (n = 3), elbow (n = 3), arm (n = 1), ankle (n = 1), and wrist (n = 2). Figure 1 illustrates the aforementioned data. The differences between first area of onset between the two groups were statistically significant (P < 0.001).

Taking thyroid disorders as an autoimmune comorbid disease into account, only one (1.7%) patient in the early-onset group was suffering from thyroid disorder, while in the late-onset group this number was 22 (12.6%) (Figure 2). This difference was statistically significant according to Fisher's exact test (P = 0.011). However, considering the family history of thyroid disorders, 14 (23.3%) patients in the early-onset group reported such disorders in near relatives and, comparably, 39 (22.4%) patients in the late-onset group also reported such family history. This difference was

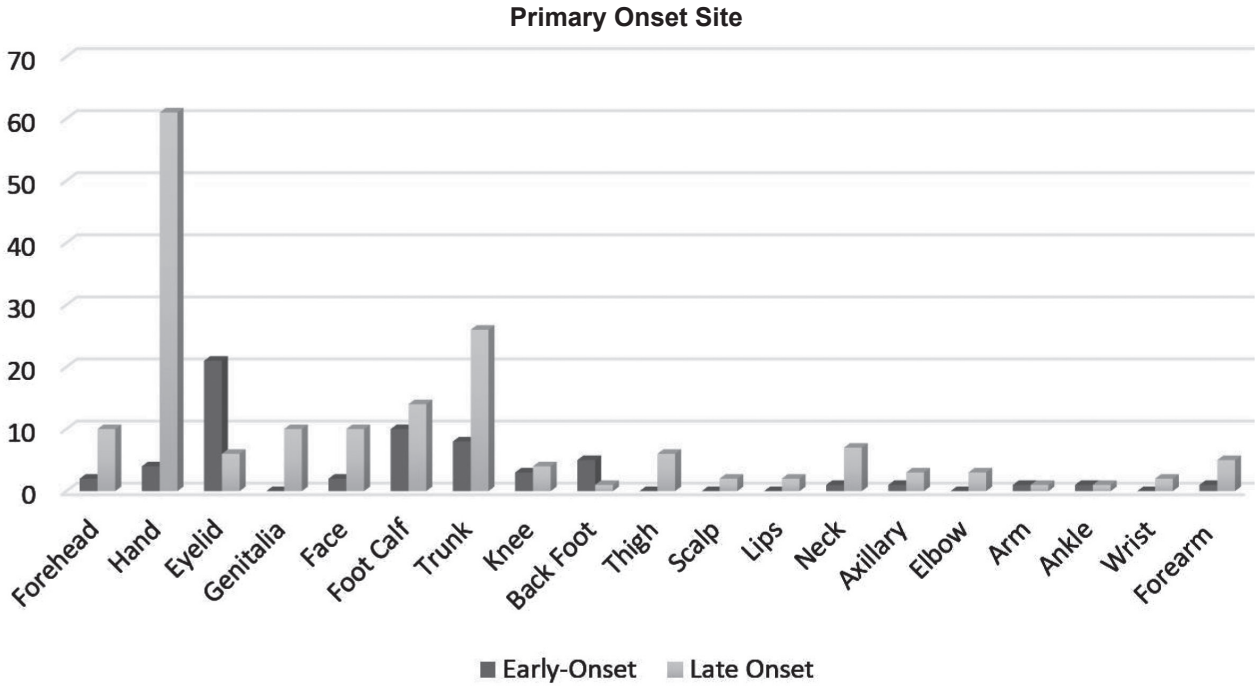

Figure 1. Comparison of primary onset site frequency between patients with early-onset and late-onset vitiligo.

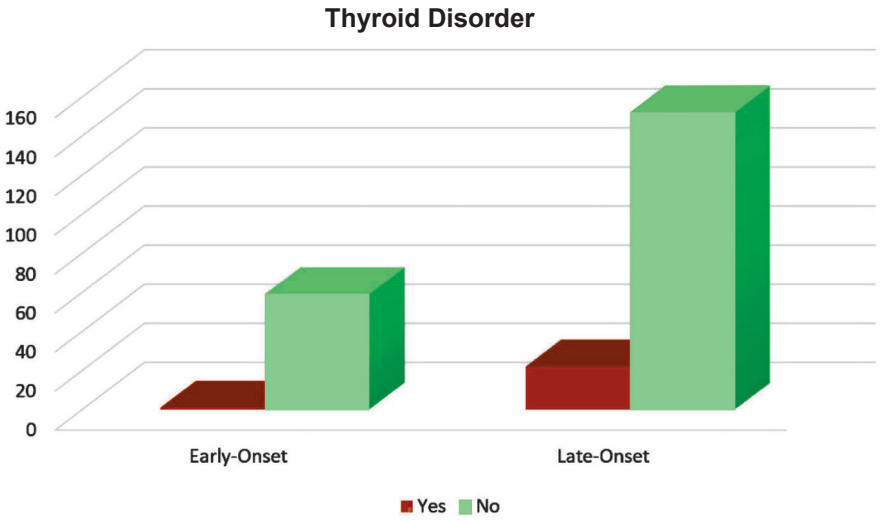

Figure 2. Comparison of thyroid disorder as a comorbid disease between patients with early-onset and late-onset vitiligo.

not statistically significant (P = 0.860).

Regarding the form of vitiligo, 7 patients (11.7%) had segmental disease and 53 (88.3%) had non-segmental disease in the early-onset group, while 8 (4.6%) individuals had segmental vitiligo and 166 (95.4%) had non-segmental vitiligo in the late-onset group; this difference was not statistically significant (P = 0.068). In the early-onset group, 3 patients (5%) suffered from atopy compared to 11 patients (6.3%) with late-onset vitiligo (P = 0.496). Considering the familial history of vitiligo, there were 8 (13.3%) patients with a positive history in the early-onset group compared with 39 (22.4%) patients in the late-onset group. Again, this difference was not statistically significant (P = 0.140).

DISCUSSION

Vitiligo is the most prevalent depigmentation disorder, mostly developing in childhood. Although some previous studies have reported a mean age of onset of 4-8 years [8-10], 6.5% of investigated patients in one study demonstrated disease onset after 50 years of age [1]. Therefore, vitiligo-associated depigmentation can occur at any age. Some reports indicate different clinical and epidemiological features for patients with onset before 12 years of age. These differences include a higher frequency of the segmental form, greater association with atopy, a more positive family history, and a lower probability of autoimmune disorders [11]. In most cases, vitiligo starts to develop in childhood (before 12 years of age). In fact, previous studies have reported that almost 25% of patients develop vitiligo before reaching 12 years of age [8,9,12]. Our results, similar to previous studies, showed an early-onset disease rate of 25.6% (60 out of 234).

Considering our results, the majority of early-onset patients were females. However, among late-onset patients, males were more prevalent than females. This might suggest that females are more prone to vitiligo in early life. Previous investigations suggest female dominance with rates of 57%-66% among early-onset patients [8,12], while our results indicate an even higher frequency (75%) of female patients in the early-onset group. The female/male ratios in the early-onset and late-onset groups were 3:1 and 0.83:1, respectively. This was also similar to previous studies [2]. However, certain other studies like Pajvani *et al.* [13] and Hu *et al.* [9] did not report any significant differences among the genders. Cultural norms might have a role in such differences where gender can affect the rate of reference to health services.

Several previous studies reported the head and neck as the most frequent and the upper limbs as the least frequent sites for vitiligo development among early-onset patients [13,14]; similarly, our results indicated the eyelid area as the most frequent site, with significantly different sites being common among the late-onset patients. Among this latter group, vitiligo tended to appear first on the upper limbs, specifically on the hands. Nicolaidu *et al.*, in a study on Greek patients, reported similar data regarding the initial site of disease onset [15]. Compelling causes for such variations in onset sites are still unknown.

It has been reported that children with vitiligo are less prone to developing autoimmune and hormone disorders compared with late-onset vitiligo patients [14,16]. According to our results, the higher rate of comorbid thyroid disease in the late-onset group was statistically significant, implying its high incidence in this group. To justify this difference, it has been suggested that thyroid disorders can be in a subclinical status among children with vitiligo, thereby being missed in the clinical evaluation [7,17].

CONCLUSION

Marked differences in clinical features were present between patients with early-onset and late-onset vitiligo. Females were more prevalent in the early-onset group and the frequency of thyroid disorder was less relative to the late-onset group. Further studies with different age cut-offs for categorizing early and late-onset vitiligo seem necessary; confounding variables should also be taken into account.

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Conflict of Interest: None declared.

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