SHORT COMMUNICATION

Paediatric Poliosis as the Presenting Feature of Scalp Vitiligo: A Retrospective Case Series

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Vitiligo is a chronic, multifactorial depigmenting dermatosis characterized by a selective loss of melanocytes in the epidermis and hair follicle reservoirs (1). In hair-bearing areas, vitiligo is sometimes accompanied by leukotrichia (white hairs), which is generally considered an sign of depleted follicular melanocytic reservoirs (2). Leukotrichia on the scalp can pose added psychological burden to patients with scalp vitiligo (3). Research on scalp vitiligo in paediatric populations could be worth pursuing, as children are relatively free from cumulative stimuli and environmental factors, such as the use of hair perm chemicals, dyes, or straighteners, which can affect the detection of vitiligo along the scalp. The aim of this retrospective study was to characterize scalp vitiligo lesions in children.

MATERIALS AND METHODS

All paediatric patients under 18 years of age with vitiliginous lesions on the scalp who were referred to our hospital for patchy poliosis from 2011 to 2021 were reviewed by the same dermatologist. Depigmentation of scalp skin was evaluated using Wood's lamp. Baseline demographic data and photographs were obtained at follow-up visits. Scalp lesions were categorized into 4 areas: frontal, temporal, vertex, and occipital zones. The prognosis of each patient and each lesion were analysed separately. To support the validity of the results, analysis of prognosis was limited to patients who were followed up for at least 6 months. The study was approved by the Institutional Review Board of Seoul National University Hospital (IRB number: 2006-168-1136).

Statistical analysis

Proportional data analysis of several clinical variables was conducted using the χ^2 goodness-of-fit test. Bonferroni adjustment was applied to correct for multiple comparisons. Differences in prognosis, based on the location of a scalp lesion, the number of scalp lesions, and the presence of lesions outside the scalp, were evaluated using Fisher's exact test. *p*-values less than 0.05 were considered statistically significant. All statistical analyses were performed using R software, version 3.5.3 (R Foundation for Statistical Computing, Vienna, Austria).

RESULTS

Among 1,034 paediatric patients with vitiligo who visited our hospital during the study period, a total of 34 (3.3%) with at least 1 scalp vitiligo lesion were enrolled (Table SI). The sex distribution ratio was 11:23 (male:female). The peak age of disease onset was 3.23 years (range 1–15 years, **Fig. 1**A).

Significant differences in lesional distribution were observed ($p=0.038$), with the frontal and vertex areas being most commonly involved. The proportion of patients with a single lesion on the scalp was significantly higher than that of patients with multiple lesions ($p=0.0006$). All cases were accompanied by poliosis. Vitiligo lesions outside the scalp were found in 15 patients (44.1%), while 19 patients (55.9%) had lesions only on the scalp (no statistical significance). The face (53.3%, Fig. S1) was the most commonly affected site

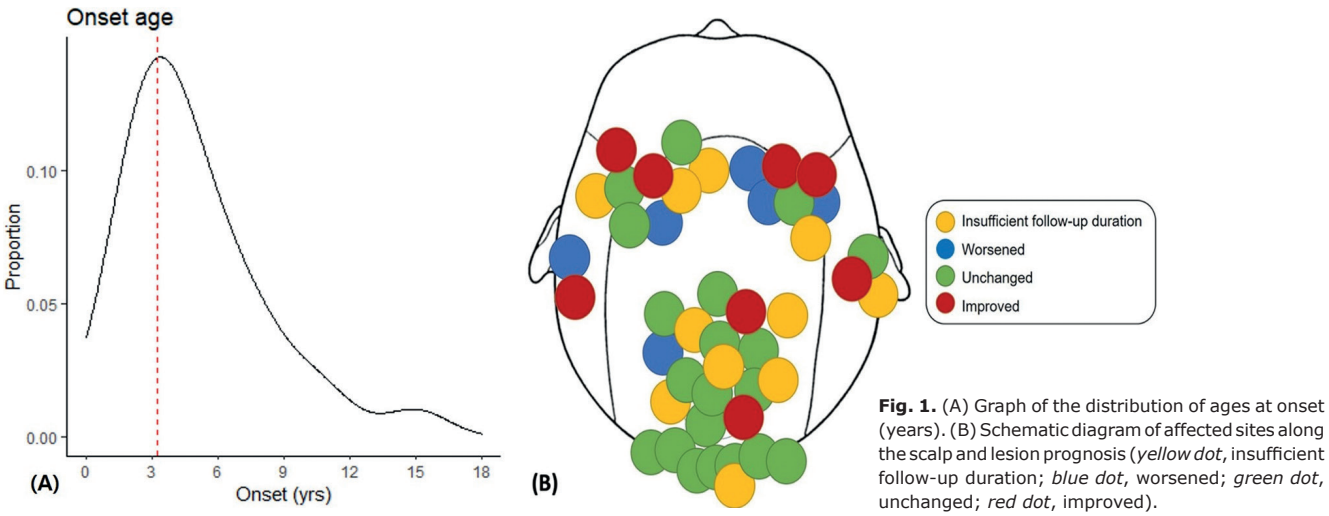

Fig. 1. (A) Graph of the distribution of ages at onset (years). (B) Schematic diagram of affected sites along the scalp and lesion prognosis (*yellow dot*, insufficient follow-up duration; *blue dot*, worsened; *green dot*, unchanged; *red dot*, improved).

other than the scalp. One case of morphea and 2 cases of alopecia areata were reported as comorbidities. Both lesions of alopecia areata were located independently of the vitiliginous areas.

Lesion improvement was most commonly recorded along the frontal scalp, while vertex and occipital lesions tended to remain unchanged (Fig. 1B). Patients with lesions outside the scalp appeared to experience significantly worse prognoses ($p = 0.047$). Onset age, number of lesions, treated or untreated states, and type of treatment showed no significant association with prognosis (Table SII).

DISCUSSION

The proportion of improved cases in the current study population totalled 15.38% (4 of 26 patients, who were followed up for at least 6 months (Fig. S2). A systematic review of repigmentation rates in patients with vitiligo reported an at least mild response in 62.1% of patients after 3 months of narrow-band ultraviolet B (UVB) treatment (4). Regarding topical calcineurin inhibitors, 69.6% and 65.2% showed >50% repigmentation with tacrolimus and pimecrolimus after 6 months, respectively (5). Compared with these previous studies, scalp vitiligo showed worse prognosis and lower response rates.

Vitiligo lesions along the frontal scalp near the face tend to be more recognizable than those at other sites and can prompt patients to visit a dermatology clinic earlier. Moreover, application of topical ointment is easier along the frontal scalp and performing laser phototherapy is less difficult because hairs seldom hinder access to the lesion. These may help result in a more favourable outcome. In contrast, patients often report discomfort applying topical ointment on the vertex and occipital scalp because they cannot see the lesions easily, and applying ointment can leave the hair feeling greasy, hindering compliance. Also, laser treatment is hindered by overlying hairs in these areas. These factors may account for the lack of a marked change with treatment of lesions in these areas.

Common dermatological comorbidities of vitiligo are alopecia areata, systemic lupus erythematosus, dermatomyositis, scleroderma, psoriasis, and atopic dermatitis (6). Among the current study population, morphea occurred in 1 case on the back, 5 years after the onset of vitiligo. There were 2 cases of alopecia areata and, despite the absence of a previous alopecic patch on the scalp vitiligo lesion, leukotrichia hairs on recovered alopecia areata lesions should be considered in differential diagnosis (7).

Strength and limitations

A strength of this study is that it includes long-term data covering 10 years and as many patients of this rare disease entity as possible. The limitations of the study are its retrospective nature, the racial/ethnic homogeneity of the enrolled patients with similar skin tones and hair colour, and potential selection bias toward severe cases from a tertiary referral hospital. Also, since most of the cases presented with a single lesion, it was difficult to determine whether the vitiligo lesions encompassed segmental vitiligo. Due to clinical similarity, it is difficult to exclude the possibility that patients with follicular vitiligo (8) or white hair growth associated with alopecia areata could have been included in the current study population. Although depigmentation of the scalp was assessed using a Wood's lamp, follicular vitiligo, which mainly affects melanocyte reservoirs in the hair follicle (2, 9, 10), could not be fully differentiated from scalp vitiligo due to the retrospective nature of this study.

Conclusion

This study outlines the clinical characteristics and expected prognoses of scalp vitiligo lesions in children. In cases of scalp vitiligo along the front of the scalp without extra-scalp involvement, we recommend more aggressive treatment (e.g. daily application of topical ointment, laser phototherapy, or grafting). In patients with occipital lesions with extra-scalp lesions, we would expect unsatisfactory treatment responses. The data from this study will enable dermatologists to inform patients and their families about the probable outcomes of these lesions, in order to reduce excessive financial burden of treatment such as consecutive excimer laser therapy and unrealistic expectations towards the treatment results.

The authors have no conflicts of interest to declare.

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