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## Defining trichoscopy clue in children with alopecia areata

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### ABSTRACT

Alopecia areata (AA) were considered autoimmune non-scarring hair loss, found in 0,2% of the general population. Trichoscopy is a strong supporting diagnostic tool, especially for pediatric AA, which commonly presents in daily practice, and this case report aims to highlight its importance. A 4-year-old girl was brought to the outpatient clinic with a chief complaint of enlarging baldness for nine months. The lesion was initially coin-sized and gradually enlarged without itchiness. Supporting diagnostics revealed a reactive toxoplasma IgG with unremarkable trichoscopic findings, leading to the diagnosis of toxoplasma-related AA. Follow-up examination of trichoscopy after six weeks of therapy revealed significant improvement as indicated by short velus hair, pigtail hair, and upright regrowth. Prior reports have shown that there are several findings distinguishing adult and pediatric AA. Although these findings may be absent during the initial assessment, follow-up trichoscopy is essential to show hair regrowth indicating successful therapy. Trichoscopy serves as a valuable tool in the management of AA, with pediatric patients providing specific characteristics. Moreover, findings may differ depending on disease activity.

**Key words:** alopecia areata; trichoscopy; therapeutic response; pediatric.

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## Introduction

Alopecia areata is considered a non-scarring autoimmune hair loss condition. The prevalence of this disease is around 0.2% in the general population.<sup>1</sup> Despite the low number, AA was reported to be the third most common reason for pediatric dermatology consultations. It is estimated that approximately 40% of individuals experience their first episode of hair loss before the age of 20.<sup>2</sup> The diagnosis of AA can be supported by the characteristic findings on trichoscopy, which can demonstrate both disease activity and improvement in AA condition.<sup>3</sup> This case illustration had been successfully presented at the International Scientific Meeting on Cosmetic Dermatology incorporation with the International Society for Laser Surgery & Medicine Congress on June 2023 held in Bali and was aimed to highlight the importance of trichoscopy examination in assisting clinicians to manage cases of AA.

## Case report

A 4-year-old girl presented with a complaint of gradually expanding bald patches for nine months. The initial patch was the size of a coin and progressively increased in size. The patient also experienced eyebrow and eyelash loss without itching or scales. Acid-fast bacilli examination and KOH scraping were previously performed and yielded negative results.

Physical examination revealed patchy, non-scarring alopecia with a pattern resembling "opiasis" in the frontal, parietal, and occipital regions (Figure 1). Bilateral madarosis (loss of eyelashes) was also observed, and the hair pull test was negative. Trichoscopy examination revealed the presence of pinpoint white dots. Laboratory

examinations revealed reactive IgG antitoxoplasma test result (4968), and the patient was subsequently diagnosed with toxoplasma-related AA.

The treatment regime included mehisoprinol 250 mg three times a day, twice a week for three weeks within one month, light-emitting diode (LED) therapy done weekly, application of 2% minoxidil lotion, and hydrocortisone 17-butyrate lotion, both done twice a day on the scalp area. During a follow-up visit after six weeks of therapy, a physical examination revealed multiple velus hairs in the alopecia area, and a trichoscopy examination showed short velus hairs, pigtail hair, and upright regrowth, indicating a good response to the treatment provided, as a result, the administration of therapy was continued (Figure 2).

## Discussion

The disease course of AA is still unpredictable, and several negative prognostic factors for AA include extensive hair loss (widespread alopecia areata, alopecia totalis, or alopecia universalis), ophiasis pattern of hair loss, prolonged disease duration, and onset before puberty.<sup>3</sup> In the current case review, AA appeared in childhood, accompanied by extensive hair loss and ophiasis pattern, both of which are poor prognostic factors.

The diagnosis of AA is established through medical history and physical examination, revealing patchy, non-scarring hair loss, typically affecting the scalp.<sup>4</sup> Trichoscopy can be performed to assist in the diagnosis and monitoring of therapeutic response. The most common trichoscopy findings in AA include yellow dots, short vellus hairs, and exclamation hairs, which are pathognomonic signs of the disease. Other characteristic findings in AA include black dots, tapered hairs, broken



**Figure 1.** Clinical manifestations of Alopecia Areata at the initial visit.

hairs, upright regrowing hairs, pigtail hairs, and Pohl-Pinkus constrictions. However, there is no pathognomonic trichoscopic marker of AA. The diagnosis should be based on the coexistence and correlation of several trichoscopic findings.<sup>3,5</sup>

During the initial assessment of the current case, the trichoscopy findings showed only pinpoint white dots. In AA, pinpoint white dots are observed on sun-exposed skin and in individuals with skin of color.<sup>6</sup> They correspond to empty hair follicle openings and the epidermal portion of eccrine sweat ducts. Yellow dots considered to be the most sensitive trichoscopic feature of AA, represent follicular openings filled with keratinous debris mixed with sebum, but were not seen in our case. This might be caused by the underdevelopment of sebaceous glands in children's findings.<sup>5,6</sup> Black dots seen together with multiple exclamation mark hairs indicate an ongoing process of active alopecia areata but were not found in this patient. Thus, we assumed that our patient was long-standing.<sup>6</sup> After undergoing a therapy regime for 6 weeks, the follow-up examination revealed the presence of short vellus hairs, pigtail hair, and upright regrowth, indicating a good response to the treatment provided.

A study by Wa kiel-Burnat *et al.* in 2019 compared trichoscopy findings in pediatric and adult AA patients, and they found that empty follicular openings and pigtail hairs are significantly more frequent in the pediatric age group.<sup>3</sup> Pigtail hairs are circular, short, regrowing hairs with tapered ends, which strongly indicates regrowth as a response to therapy or during the remission phase.<sup>3,5</sup> There was also a significant relationship between vellus hair and a lower Severity of Alopecia Tool (SALT) score in AA.<sup>7</sup>



**Figure 2.** a) Trichoscopy at initial visit showing pinpoint white dots (blue arrow); b) and c) 6 weeks trichoscopy evaluation showing upright regrowth (green arrow), pigtail hair (orange arrow), and short vellus hair (yellow arrow).

## Conclusions

This study reviews a case of a 4-year-old girl with enlarged baldness who was eventually diagnosed with toxoplasma-related AA. After completing a six-week regime of therapy, a trichoscopy examination revealed significant improvement with findings of short vellus hair, pigtail hair, and upright regrowth. Previous studies have shown other specific trichoscopy findings of pediatric cases with AA, such as empty follicular openings and pigtails, that distinguishes it from adult. Moreover, trichoscopy of alopecia areata may differ depending on disease activity, severity, and duration. It's proven that trichoscopy examination serves as a valuable tool for diagnosis, identifying the disease activity, and treatment follow-up in AA, thus should always be considered to be used in daily practice.

**Contributions:** RA: primary case clinician; GM: manuscript preparation; overall case manager; IB: case consultant on initial therapy; LL: case consultant on follow-up therapy; SPS: subspecialistic case discussion reviewer; EN: subspecialistic case discussion reviewer; SNY: final consultant approval of the manuscript.

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**Ethics approval and consent to participate:** no ethical committee approval was required for this case report by the Department.

**Patient consent for publication:** the patient's guardians gave their written consent to use the patient's personal data for the publication of this case report and any accompanying images.

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