

Clinico-dermoscopic features of alopecia areata in patients with psoriasis



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INTRODUCTION

Psoriasis and alopecia areata (AA) are among the most prevalent autoimmune inflammatory diseases, affecting 1% to 4%¹ and 0.1% to 0.2%² of the worldwide population, respectively. Alopecia, decreased hair density, thin hair, and an increased number of dystrophic bulbs have been described in the context of the psoriatic plaques and thought to be causally associated with psoriasis.^{3,4} Nevertheless, most patients with psoriatic alopecia experience complete regrowth of scalp hair after successful treatment of their scalp psoriasis.³

Among systemic treatments, methotrexate and retinoids are known to be associated with alopecia,^{5,6} whereas there are conflicting results about anti-tumor necrosis factor (TNF) and alopecia areata.^{7,8} Few epidemiologic studies found that patients with psoriasis are at greater risk of AA development.^{9,10} It is estimated that patients with psoriasis have a 2.5-fold higher risk of AA development and are more likely to have at least 1 other autoimmune disease (odds ratio [OR], 1.6; confidence interval [CI], 1.5-1.7) or even 2 other autoimmune diseases (OR, 1.9; CI, 1.6-2.4).⁹ A recent retrospective study found that vitiligo was the most frequent skin autoimmune disease associated with psoriasis, followed by AA and chronic urticaria.^{7,10} The most frequent association seems to be scalp psoriasis and AA.^{7,9} Although some investigators found that psoriatic arthritis (PsA) might represent a protective factor,^{9,10} others found that patients with AA are more frequently affected by either psoriasis or PsA.^{11,12} Several studies also found a high prevalence of comorbid conditions as atopic dermatitis, diabetes, thyroiditis, celiac disorder, psoriasis, and PsA among individuals with AA.^{11,12}

Abbreviations used:

AA:	alopecia areata
CI:	confidence interval
IL:	interleukin
OR:	odds ratio
PsA:	psoriatic arthritis
Th:	T helper
TNF:	tumor necrosis factor

We describe 4 patients affected by psoriasis and concomitant AA, emphasizing the clinical and dermoscopic characteristics, and correlation of the hair loss with antipsoriatic treatment. The collected data are summarized in [Table I](#).

CASE 1

A 60-year-old woman with psoriasis was referred to our clinic for the occurrence of AA on the scalp that developed during treatment with acitretin (25 mg at alternate days, since 3 months). At our observation, psoriasis plaques were detected exclusively on the scalp and were remarkably spared by the areas affected by alopecia ([Fig 1, A](#)). The dermoscopic examination of alopecia patches showed broken hairs and yellow dots, with an abrupt end at the border with the large white plaque of psoriasis ([Fig 1, B](#)). Treatment with acitretin was discontinued, and once-daily application of clobetasol cream on the entire scalp was prescribed. An almost complete regression of the scalp psoriasis was achieved after 2 weeks of treatment but worsening of AA, with involvement of approximately 60% of the scalp, and extension to sites previously affected by psoriatic plaques, was also observed. Treatment with once-monthly injection of triamcinolone (diluted 1:2

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Table I. Summarized clinical features of the reported patients

	Gender and age	Psoriasis treatment	Subtype of alopecia areata	Therapy performed for AA
Case 1	F, 60 y	Acitretin (for 3 mo)	<50% of the scalp	Triamcinolone, 40-mg injections
Case 2	M, 40 y	Adalimumab (for 1 y)	Alopecia areata universalis	Switch to ustekinumab
Case 3	M, 49 y	Etanercept (for 14 mo)	<50% of the scalp	Triamcinolone, 40-mg injections
Case 4	M, 46 y	Ustekinumab (for 5 y)	Beard	Potent topical steroids

with saline solution) on the patches of alopecia resulted in complete hair regrowth after two injections (Fig 1, C) and no recurrence after 12 months of follow-up.

CASE 2

A 40-year-old man was examined for the presence of skin psoriasis and alopecia universalis. Skin psoriasis developed at the age of 27 years, whereas the first patch of alopecia on the scalp occurred 2 years later during topical treatment with corticosteroids for scalp psoriasis. Over the subsequent 3 years, the alopecia slowly progressed to become universalis. The patient had been treated with clobetasol foam and squaric acid dibutylester followed by cyclosporin, acitretin, and narrow-band ultraviolet B therapy, with poor or no clinical benefit on both psoriasis and alopecia. He also participated in a phase III clinical trial with tildrakizumab (interleukin [IL]-23 inhibitor), with relapse of psoriasis (secondary failure) but no hair changes (no worsening of alopecia). The patient was subsequently treated with adalimumab (40 mg every other week) achieving a Psoriasis Area and Severity Index (PASI) score of 75 improvement but worsening of alopecia areata after 12 weeks (Fig 2, A). Dermoscopic examination found the presence of broken hairs and yellow dots at (Fig 2, B). Therefore, the patient was switched to treatment with ustekinumab (90 mg every 12 weeks), which allowed maintenance of cutaneous clinical benefit and almost complete regrowth of the hair after 6 months of treatment (Fig 2, C).

CASE 3

A 49-year-old man was referred for the onset of AA on the temporal region. He was affected by skin psoriasis and PsA since the age of 41 years so he had already received systemic cyclosporine and adalimumab, resulting in a very modest clinical benefit. At the time of our observation, he was under treatment with etanercept (50 mg/wk) for 1 year with complete clearing of cutaneous lesions despite the occurrence of AA. Dermoscopy findings showed signs of active AA, such as broken hairs and yellow dots, adjacent to whitish and yellowish plaques of psoriasis. After

12 weeks of treatment with once-monthly triamcinolone injection, a low-to-moderate hair regrowth was achieved, consisting of short and new whitish hairs in the same areas previously affected by the alopecia patches. This clinical response is still maintained as such after 12 months of follow-up.

CASE 4

A 46-year-old man presented with psoriasis and PsA of 20 years' duration. In time, he had been treated with cyclosporin, etanercept, infliximab and adalimumab, which were interrupted for lack of efficacy or occurrence of side effects. During the last 5 years, the patient had been treated continuously with ustekinumab, with a complete clinical response, when a few patches of AA suddenly appeared on the beard area showing dermoscopically broken hairs and exclamation mark hairs. The patient was treated with high-potency topical corticosteroids with 75% regression of the patches. The patient continued treatment with ustekinumab for psoriasis, and after 1 year of follow-up no worsening of AA has been observed.

DISCUSSION

Several mechanisms have been suggested to explain the association between AA and psoriasis. A common genetic predisposition between psoriasis and alopecia has been suggested on the basis of recent genome-wide association studies.^{13,14} However, Tauber et al⁸ suggested that the association of AA with psoriasis is merely caused by the effect of antipsoriatic treatments.

AA has indeed been described in psoriatic patients during systemic treatments with traditional (eg, cyclosporine) and biologic agents (eg, anti-TNF- α and efalizumab).^{7,8,12,14,15} Therefore, AA development seems to be strongly associated with systemic therapies for psoriasis. In our case series, AA arose or worsened during treatment with TNF- α inhibitors in 2 of 4 cases (cases 2 and 3), with ustekinumab in 1 of 5 (patient 4) and acitretin (case 1). The temporal relationship between initiation of antipsoriatic treatments and onset of hair loss may be highly variable ranging from a few weeks to up to some years.^{7,8}

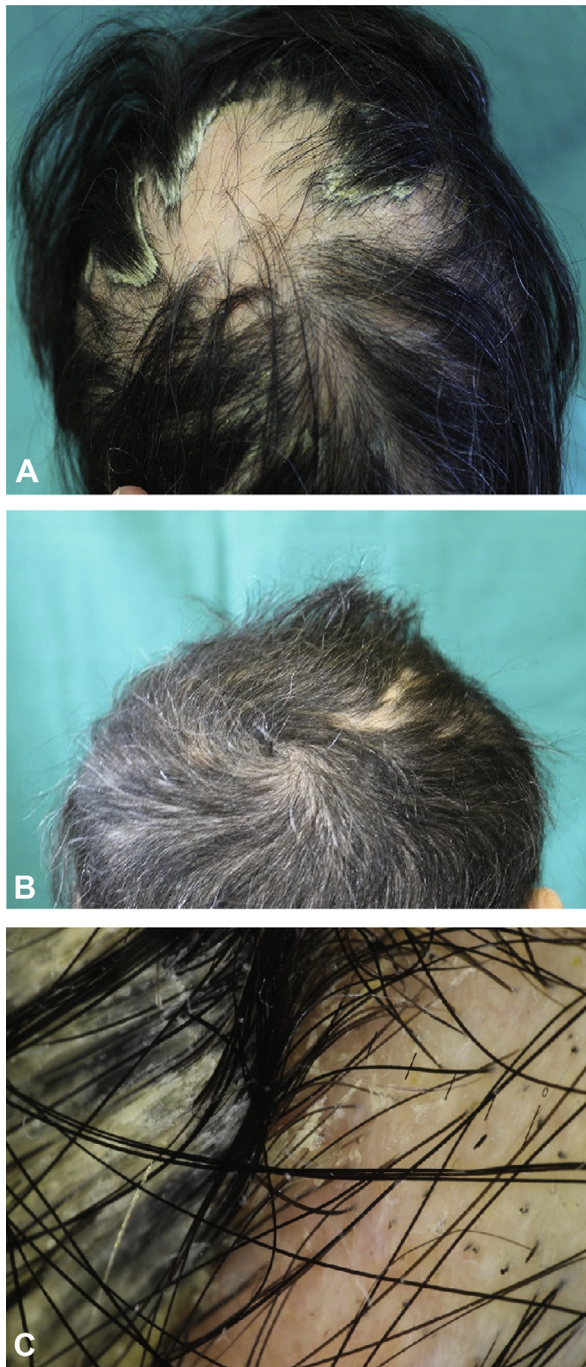


Fig 1. Clinical appearance at baseline (A) and after hair regrowth (B) and trichoscopy (C) at baseline in patient 1.

This finding has been also observed in our case series, with a variable range of 3 months to 5 years. The exact mechanisms through which these therapies may aggravate or induce AA in psoriatic patients are unknown. Because the pathogenesis of both psoriasis and AA involve mainly T helper (Th)1 and Th17 response, new IL-17 inhibitors used for psoriasis might also be useful to treat AA. Interestingly,

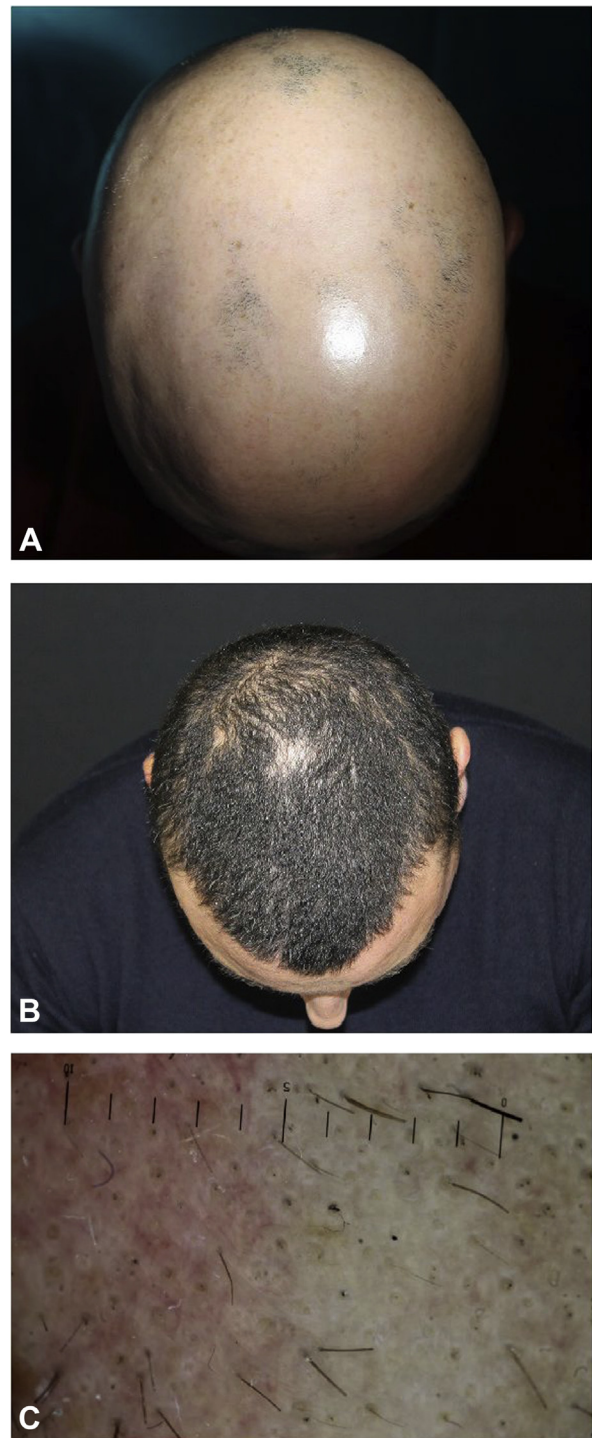


Fig 2. Clinical appearance at baseline (A) and after hair regrowth (B) and trichoscopy (C) at baseline in patient 2.

one of our patients (case 2), experienced exacerbation of AA despite the improvement of psoriasis during treatment with anti-TNF- α , whereas a hair regrowth was experienced after the switch to anti-IL-12-23. It is plausible that similar immune pathways (involving Th1/Th2 imbalance) may

address different patterns of disease. The term *duelling cytokines* has been used to account for these complex interactions.^{15,16} This was particularly true in one of our patients (case 1) who presented the typical Renbök phenomenon, which refers to normal hair growth in psoriatic lesions and patch of AA in areas unaffected by psoriasis. It has been hypothesized that in severe psoriasis, the immune system can inhibit the development of AA, as the 2 diseases are mutually exclusive.^{14,16} Trichoscopy may be useful to identify the borders of lesions related to the 2 diseases and to define which is the most active disease (psoriasis vs alopecia) and consequently optimize the type and sequence of treatment approach. The specific dermoscopic patterns of AA in the active phase include broken hairs, exclamation mark hairs and yellow dots, whereas the presence of dotted/glomerular vessels, and erythema with scales are suggestive of psoriasis.^{15,17}

Because AA occurring during systemic treatment of psoriasis can be managed successfully with intralesional or topic corticosteroids, as described in our cases, treatment discontinuation should be decided on an individual basis. In some patients, however, a therapeutic switch to another class of biologic agents is mildly recommended, but probably only when the exact pathogenesis of AA associated with scalp psoriasis will be completely elucidated, it will be possible to choose the right biologic drug for these patients.

REFERENCES

- Boehncke WH, Schön MP. Psoriasis. *Lancet*. 2015;386(9997):983-994.
- Dainichi T, Kabashima K. Alopecia areata: What's new in epidemiology, pathogenesis, diagnosis, and therapeutic options? *J Dermatol Sci*. 2017;86(1):3-12.
- Shuster S. Psoriatic alopecia. *Br J Dermatol*. 1972;87:73-77.
- Runne U, Kroneisen-Wiersma P. Psoriatic alopecia: acute and chronic hair loss in 47 patients with scalp psoriasis. *Dermatology*. 1992;185:82-87.
- Van Dooren-Greebe RJ, Kuijpers AL, Mulder J, et al. Methotrexate revisited: effects of long-term treatment in psoriasis. *Br J Dermatol*. 1994;130:204-210.
- Pearce DJ, Klinger S, Ziel KK, et al. Low-dose acitretin is associated with fewer adverse events than high-dose acitretin in the treatment of psoriasis. *Arch Dermatol*. 2006;142:1000-1004.
- Tosti A, Pazzaglia M, Starace M, Bellavista S, Vincenzi C, Tonelli G. Alopecia areata during treatment with biologic agents. *Arch Dermatol*. 2006;142(12):1653-1654.
- Tauber M, Buche S, Reygagne P, et al. Alopecia areata occurring during anti-TNF therapy: a national multicenter prospective study. *J Am Acad Dermatol*. 2014;70(6):1146-1149.
- Wu JJ, Nguyen TU, Poon KY, Herrinton LJ. The association of psoriasis with autoimmune diseases. *J Am Acad Dermatol*. 2012;67(5):924-930.
- Carubbi F, Chimenti MS, Blasetti G, et al. Association of psoriasis and/or psoriatic arthritis with autoimmune diseases: the experience of two Italian integrated Dermatology/Rheumatology outpatient clinics. *J Eur Acad Dermatol Venereol*. 2015;29:2160-2168.
- Chu SY, Chen YJ, Tseng WC, et al. Comorbidity profiles among patients with alopecia areata: the importance of onset age, a nationwide population-based study. *J Am Acad Dermatol*. 2011;65(5):949-956.
- Huang KP, Mullangi S, Guo Y, Qureshi AA. Autoimmune, atopic, and mental health comorbid conditions associated with alopecia areata in the United States. *JAMA Dermatol*. 2013;149(7):789-794.
- Petukhova L, Duvic M, Hordinsky M, et al. Genome-wide association study in alopecia areata implicates both innate and adaptive immunity. *Nature*. 2010;466(7302):113-117.
- Martinez-Mir A, Zlotogorski A, Gordon D, et al. Genomewide scan for linkage reveals evidence of several susceptibility loci for alopecia areata. *Am J Hum Genet*. 2007;80:316-328.
- Misciali C, Peluso AM, Cameli N, Tosti A. Occurrence of alopecia areata in a patient receiving systemic cyclosporine A. *Arch Dermatol*. 1996;132:843-844.
- Wyllie GR, Burden D. Renbok phenomenon between psoriasis and alopecia areata. *Clin Exp Dermatol*. 2011;36(7):816-817.
- Miteva M, Tosti A. Hair and scalp dermatoscopy. *J Am Acad Dermatol*. 2012;67(5):1040-1048.