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Successful Management of Severe Pediatric Annular Psoriasis with Targeted IL-17 Inhibition using Ixekizumab: A Case Report

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Abstract:

Annular psoriasis is a less frequently encountered morphological variant of pediatric psoriasis that may be misdiagnosed because of its clinical overlap with other annular conditions. We report a case of a 9-year-old girl who presented with generalized annular erythematous plaques with silvery scales involving >10% body surface area (BSA). Despite 12 months of optimized topical therapy, the disease progressed to >50% BSA, with scalp, facial, and nail involvement. Histopathological findings confirmed psoriasis. Ixekizumab was initiated with an 80-mg subcutaneous loading dose followed by 40 mg every 4 weeks, resulting in complete clearance of skin and nail lesions at 3 months, with only residual post-inflammatory hypopigmentation and no reported adverse events. This case highlights the potential for rapid progression of pediatric annular psoriasis and supports ixekizumab as an effective and well-tolerated treatment option for severe disease refractory to topical therapy.

Keywords:

annular psoriasis, ixekizumab, pediatric psoriasis, IL-17A inhibitor, nail psoriasis

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Introduction

Psoriasis is a chronic inflammatory immune-mediated skin disease that typically predominates in adults; however, its prevalence among children has been rising in the last decade [1]. Annular psoriasis is an infrequent morphological subtype of plaque psoriasis that is usually misdiagnosed, especially in pediatric age, as it similarly represents other annular

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inflammatory dermatoses, leading to delayed appropriate management.

Ixekizumab is an interleukin-17A (IL-17A) inhibitor approved by the U.S. Food and Drug Administration for the management of pediatric moderate-to-severe plaque psoriasis in 2020 [2]. By directly targeting IL-17A, ixekizumab blocks the key cytokine in the interleuken-23/T-helper 17 axis, the central pathway in psoriasis [3]. In this case report, we present an atypical presentation of generalized erythematous annular skin lesions in a child since age 9.

Case Presentation

This is a female pediatric patient, medically and surgically free and with a positive family history of consanguinity, who initially presented at the age of 9 with multiple well-demarcated oval and annular erythematous plaques with silvery scales involving the scalp, face, trunk, upper and lower extremities, affecting >10% body surface area (BSA) and a Psoriasis Area and Severity Index (PASI) score of 33, sparing the nails and genital area. No history of bullae or pustular lesions was elicited. Prior to referral, she had received topical therapy at a private clinic, including betamethasone and calcipotriol/betamethasone, resulting in mild, unsustained improvement. Clinical assessment findings were highly suggestive of annular plaque psoriasis; therefore, management with optimized topical therapy was initiated, including calcipotriol/betamethasone cream for the body, hydrocortisone for facial lesions, tacrolimus for maintenance, calcipotriol/betamethasone gel for scalp involvement, and liberal emollients.

Despite adherence to topical treatment over one year, the disease demonstrated significant progression. On examination, scalp plaques extended to the posterior hairline and occiput, with new retroauricular plaques and persistent annular facial lesions. Coalescing plaques involved most of the upper back, bilateral extensors, flexors, and hand dorsum, with symmetrical annular plaques with central clearing over the knees and shins (Figure 1). New nail involvement emerged in the form of pitting of the left thumbnail. Overall disease severity increased from >10% to >50% in the span of one year, meeting the criteria for severe generalized annular psoriasis. As a result, a 4mm punch biopsy was obtained from the right flank. Histopathology showed psoriasiform epidermal hyperplasia with elongated rete ridges, patchy parakeratosis, neutrophilic microabscesses, and mild perivascular chronic inflammatory infiltrate, which were consistent with psoriasis (Figure 2).

Given 12 months of topical treatment failure with rapid progression in BSA and scalp, facial, and nail involvement, targeted biologic therapy was indicated to achieve rapid, durable disease control. Baseline screening before beginning biologic therapy, including tuberculosis testing, hepatitis B and C serology, HIV screening, complete blood count, and liver and renal function tests, was within normal limits. Vaccination status was up-to-date. The patient, weighing 32.7kg, was started on a loading dose of subcutaneous 80 mg followed by 40 mg every 4 weeks. At the 3-month follow-up after initiating ixekizumab, we noticed complete clearance of psoriatic lesions and resolved nail involvement. Only post-inflammatory hypopigmentation was appreciated, with no reported adverse events (Figure 3). The patient and her family expressed a high satisfaction with treatment outcomes.

Discussion

Psoriasis is a chronic multifaceted inflammatory disease. It is estimated to affect 1-3% of children and adolescents. The most common subtype is plaque psoriasis; however, annular morphology in children is rarely observed and is commonly misdiagnosed due to limited familiarity and overlap with other annular skin conditions such as tinea corporis, pityriasis rosea, and granuloma annulare. A delay in diagnosis or suboptimal management may result in a progressive inflammatory cascade and a negative psychosocial impact [4].

The pathogenesis of psoriasis is rooted in the dysregulation of the IL-23/IL-17 axis. IL-17A's key roles include keratinocyte activation, epidermal hyperproliferation, and neutrophilic infiltration. This results in characteristic psoriasiform histopathologic features as observed in our patient, such as elongated rete ridges, parakeratosis, and neutrophilic microabscess formation [5]. Hence, targeting IL-17A has demonstrated superior efficacy in the management of moderate-to-severe plaque psoriasis. Ixekizumab is a monoclonal antibody selectively targeting IL-17A. Its efficacy and safety in pediatric plaque psoriasis were established in IXORA-PEDS, a randomized, placebo-controlled trial in children and adolescents aged 6–17 years with moderate-to-severe plaque psoriasis. At week 12, a significantly higher number of patients who received ixekizumab

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achieved PASI75, PASI90, and Physician's Global Assessment (PGA) 0/1 compared to placebo [2]. Moreover, ixekizumab demonstrated a robust onset of action, with clinically significant improvement observed as early as week 4. A recent case report documented successful treatment of generalized pediatric pustular psoriasis with ixekizumab, after failure of cyclosporine, with complete remission at week 8 [6].

In addition to overall cutaneous lesion clearance, IL-17 inhibitors have shown great therapeutic response in difficult-to-treat areas, including scalp and nail psoriasis. Nail involvement, as seen in our patient, is often associated with increased disease severity and may predict higher risk of psoriatic arthritis. As a result, early control of nail disease may lead to a positive prognosis [7]. Similar to the adult population, the safety profile of ixekizumab in pediatric patients has been favorable, with only reports of upper respiratory tract infections and injection site reactions [2]. In our case, treatment was well tolerated, with no reported adverse events and pronounced clinical improvement at three months of management.

This case underscores several important clinical considerations. First, annular presentations of pediatric psoriasis may rapidly progress despite optimization of topical therapy, emphasizing the need for close monitoring and proactive management. Second, early recognition of treatment failure and timely theraputic intensification are crucial to prevent prolonged inflammatory activity. Third, targeted IL-17 inhibition offers profound early-onset disease control in severe pediatric psoriasis, reinforcing its role in refractory cases.

Conclusion

To summarize, this case represents progressive severe pediatric annular plaque psoriasis refractory to topical therapy, with extensive BSA involvement. Early targeted therapy with IL17A inhibitor, ixekizumab, resulted in rapid, sustained disease clearance, supporting its role as a clinically effective first-line biologic, after topical therapy failure, option in moderate-to-severe pediatric annular psoriasis.

Declarations

Author Contributions: BHA contributed to conceptualization, investigation, and writing the original draft. RFA contributed to the literature review and writing the original draft. RAJ, HMA, and RMA contributed to data collection and clinical investigation. HSA contributed to supervision, clinical management, and clinical revision of the manuscript. All authors reviewed and approved the final manuscript.

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Conflict of Interest: None.

Ethics Approval: Ethics committee approval was not required for this case report, in accordance with IRB guidelines.

Patient Consent Statement: The authors obtained written consent from the patient's parent/legal guardian for the patient's photographs and medical information to be published online and with the understanding that this information may be publicly available and discoverable via search engines. Patient consent forms were not provided to the journal but are retained by the authors.

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Figure Legends



Figure 1. Baseline clinical presentation showing (A) coalescing erythematous plaques with silvery scale on the trunk and (B) symmetrical annular plaques with central clearing on the bilateral lower extremities.

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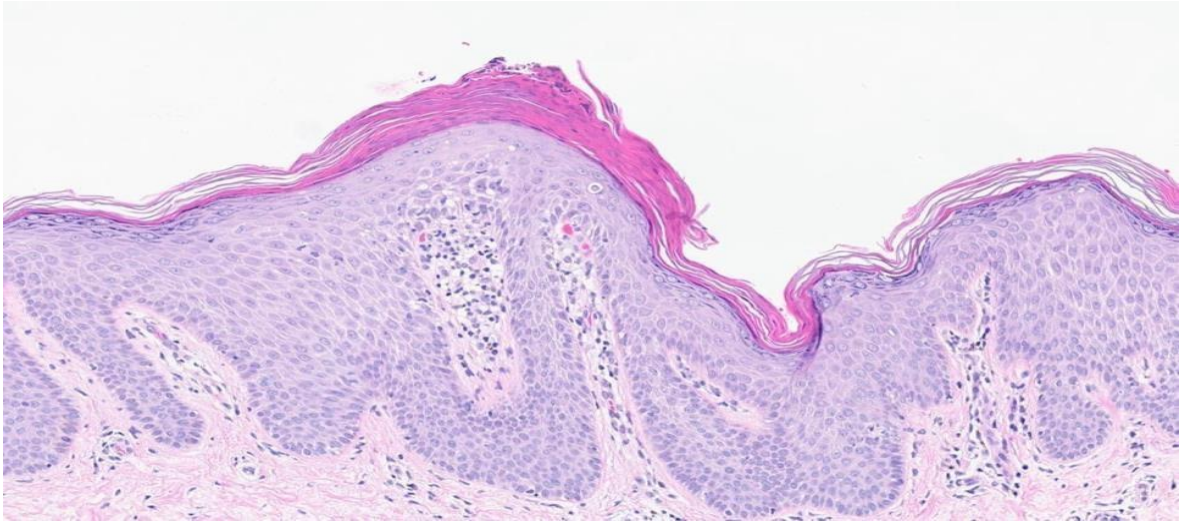


Figure 2. Histopathology of a punch biopsy from the right flank (hematoxylin and eosin) showing psoriasiform epidermal hyperplasia with elongated rete ridges, overlying parakeratosis, and neutrophilic microabscesses, consistent with psoriasis.

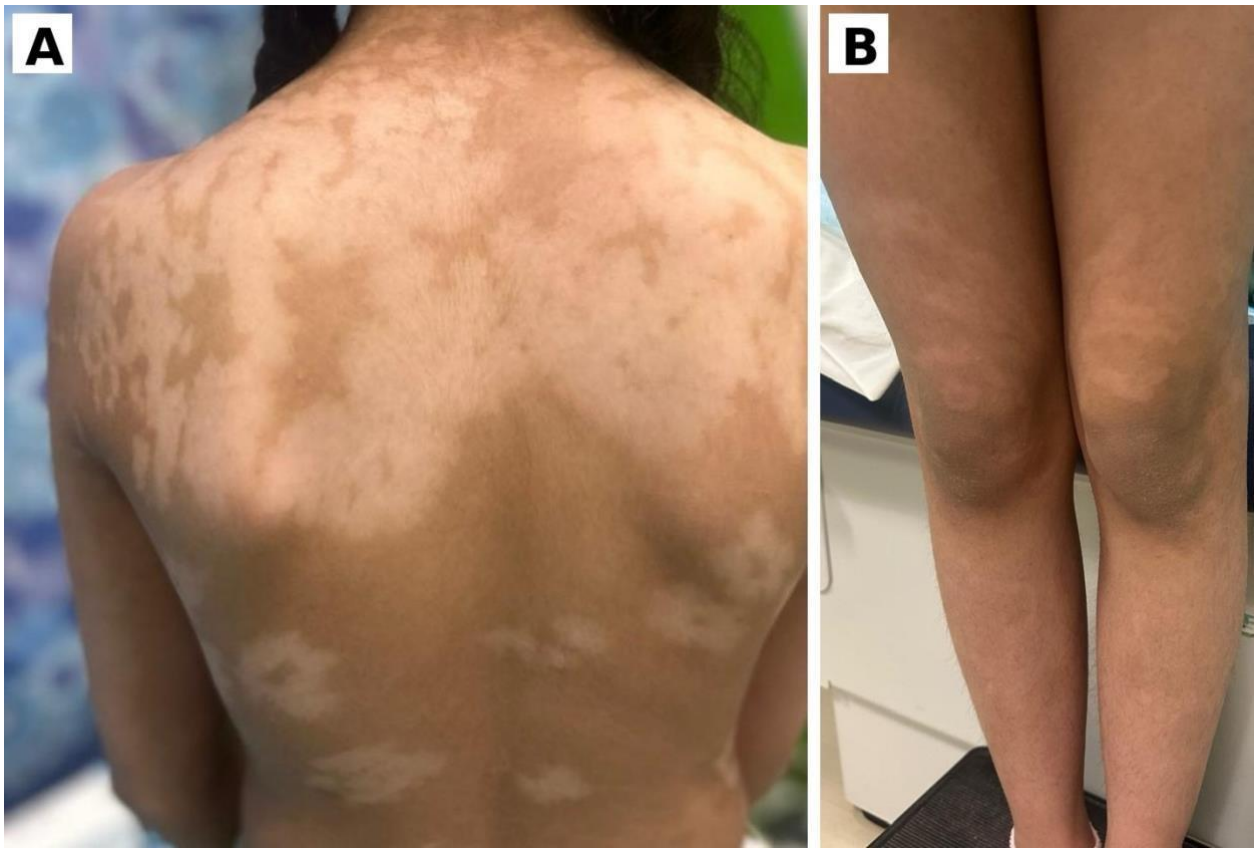


Figure 3. Clinical presentation at 3-month follow-up after ixekizumab therapy showing (A) trunk and (B) bilateral lower extremities with complete clearance of psoriatic plaques and residual post-inflammatory hypopigmentation.