

## Adalimumab induced psoriasis in a Crohn's disease patient: A case report

Dhaifallah Alenizi

### Abstract

Adalimumab is a human monoclonal antibody that selectively targets tumour necrosis factor-alpha (TNF- $\alpha$ ), a cytokine involved in the pathogenesis of various inflammatory and autoimmune disorders. Adalimumab has been approved worldwide for the treatment of several chronic immune-mediated diseases, including rheumatoid arthritis, psoriasis, psoriatic arthritis, ankylosing spondylitis, Crohn's disease, ulcerative colitis, and juvenile idiopathic arthritis. One of the adverse reactions caused by Adalimumab is psoriasis. This study reports the case of a 37-year-old male with palmoplantar psoriasis triggered by adalimumab for treatment of Crohn's disease. This eruption resisted complete clearance with various potent corticosteroids. The patient was referred back to the treating rheumatologist to possibly change adalimumab to another type of therapy.

**Keywords:** Adalimumab, psoriasis, Crohn's disease, paradoxical psoriasis.

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### Introduction

Adalimumab is a human monoclonal IgG1 antibody. It binds to a tumour necrosis factor (TNF) with high affinity and specificity, and it inhibits TNF activity by preventing its interaction with its cognate p55 and p75 cell-surface TNF receptors.<sup>1</sup> It is considered for treatment of various inflammatory diseases such as rheumatoid arthritis, psoriasis, psoriatic arthritis, ankylosing spondylitis, Crohn's disease, and ulcerative colitis.<sup>2</sup> Since 2002 when adalimumab was approved by the U.S. Food and Drug Administration (FDA), it has become a widely used and effective treatment for moderately to severely active inflammatory diseases. With time, its popularity has increased because of its easy subcutaneous delivery, its favourable pharmacokinetic profile, and its short half-life of approximately 2 weeks.<sup>3</sup> In dermatology, psoriasis is one of adverse effect of adalimumab.<sup>4</sup>

Department of Dermatology, Northern Border University, Arar, Saudi Arabia.

**Correspondence:** Dhaifallah Alrakawi Alenizi. e-mail: daalenizi@nbu.edu.sa

ORCID ID. 0000-0001-8571-2231

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**Figure :** Erythematous scaly plaques with embedded vesiculopustules on the palm and sole.

### Case Report

A 37-year-old male came to Alkhibrah Medical Complex, Arar, Saudi Arabia on May 11, 2022. He had been diagnosed with Crohn's disease on June 23, 2021, and was placed on oral steroids and methotrexate as maintenance therapy. This regimen proved unsuccessful in providing relief. He was therefore prescribed adalimumab. However, during the second month of drug administration, he developed palmoplantar psoriasiform eruption (Figures). His past and family history were unremarkable. Physical examination revealed his palms and soles to have scaly erythematous plaques with embedded vesiculopustules. Moreover, his blood investigations were normal and swabs and scrapings did not show any bacterial or fungal growth. There was no evidence of any systemic involvement. However, the histopathologic report showed psoriasiform features and therefore, he was treated with various topical corticosteroids, showing mild improvement. Subsequently, he was referred back to the treating rheumatologist for possible alternative biologic therapy.

## Discussion

The existing evidence suggests a connection between psoriasis and inflammatory bowel disease (IBD).<sup>4</sup> However, it is important to note that psoriasis may also arise as a potential side effect of medications used to treat IBD. Adalimumab is a widely used tumour necrosis factor-alpha (TNF- $\alpha$ ) inhibitor for the treatment of various inflammatory diseases, including psoriasis. A systematic review and meta-analysis of 24 randomized clinical trials found that psoriasis was more common among patients treated with adalimumab compared to those receiving a placebo, with an odds ratio of 4.13 ( $p < 0.001$ ).<sup>5</sup> It was also observed that presence of psoriasis in association with inflammatory bowel disease is not uncommon.

Guerra et al. (2012) reported seven cases of psoriasis in patients taking adalimumab for treatment of inflammatory bowel disease.<sup>6</sup> De Mattos et al. (2023) likewise reported two cases of paradoxical psoriasis in patients who were treated by adalimumab for hidradenitis suppurativa and Crohn's disease.<sup>7</sup> Zekey et al. (2022) also reported one case of paradoxical psoriasis in a patient with ankylosing spondylitis who was taking adalimumab.<sup>8</sup> It can therefore be deduced that Paradoxical psoriasis may occur in a small percentage of patients receiving adalimumab and even in patients with psoriasis, making it important for clinicians to be aware of this adverse effect and manage it appropriately. Paradoxical psoriasis typically presents as a worsening of psoriasis or the development of new psoriatic lesions in patients receiving adalimumab treatment. The exact mechanisms underlying this paradoxical reaction are not fully understood, but the inhibition of TNF- $\alpha$  may lead to a counter-increase in other proinflammatory cytokines, such as interleukin-17 (IL-17) and -23 (IL-23), which are recognized as a part of the pathogenesis of psoriasis.<sup>9</sup> Management of paradoxical psoriasis in patients receiving adalimumab includes discontinuing the drug and switching to alternative treatments such as IL-23 inhibitors, IL-17 inhibitors, or any other biologic agents with different mechanisms of action.<sup>10</sup> Reich et al. (2016) demonstrated the safety and efficacy of these alternative treatments for patients with paradoxical psoriasis, indicating the necessity of prompt management of this adverse effect.<sup>11</sup> The current case report displays the non-responsiveness of a patient diagnosed with adalimumab-induced psoriasis to topical steroids. It is thus recommended that adalimumab should be replaced with another recommended drug, which would be more effective for the treatment of Crohn's disease.

## Conclusion

It has been proved that Psoriasis is a very common adverse effect of adalimumab treatment, and therefore clinicians should remain vigilant during this specific treatment. In order to address this issue, awareness of this adverse effect and prompt management via topical steroids can prove to be effective. However, if patients do not respond to topical steroids, it may be necessary to discontinue adalimumab therapy and consider alternative treatments. Therefore, further studies are needed to establish the optimal therapeutic strategy of the anti-TNF $\alpha$ -induced paradoxical psoriasis.

**Consent:** Patient's consent was obtained for publishing his case.

**Disclaimer:** None.

**Conflict of Interest:** Department coordinator signed the letter of approval.

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## References

1. Menter A, Korman NJ, Elmets CA, Feldman SR, Gelfand JM, Gordon KB, et al. Guidelines of care for the management of psoriasis and psoriatic arthritis: Section 4. Guidelines of care for the management and treatment of psoriasis with traditional systemic agents. *J Am Acad Dermatol.* 2009; 61:451–85. <https://doi.org/10.1016/j.jaad.2009.03.027>
2. Burmester GR, Mease P, Dijkmans BA, Gordon K, Lovell D, Panaccione R, et al. Adalimumab safety and mortality rates from global clinical trials of six immune-mediated inflammatory diseases. *Ann Rheum Dis.* 2009; 68:1863–9. doi:10.1136/ard.2008.102103
3. Fiorino G, Allez M, Malesci A, Danese S. Review article: Anti TNF-alpha induced psoriasis in patients with inflammatory bowel disease. *Aliment Pharmacol Ther.* 2009; 29: 921–27. doi:10.1111/j.1365-2036.2009.03955.x
4. Singh, JA, Wells GA, Christensen R, Ghogomu ET, Maxwell L, Macdonald JK, et al. Adverse effects of biologics: A network meta-analysis and Cochrane overview. *Cochrane Database Syst Rev.* 2011; 2011:CD008794. doi:10.1002/14651858.CD008794.pub2
5. Fu Y, Lee C, Chi C. Association of Psoriasis with Inflammatory Bowel Disease: A Systematic Review and Meta-analysis. *JAMA Dermatol.* 2018; 154:1417–23. doi:10.1001/jamadermatol.2018.3631
6. Guerra I, Algaba A, Pérez-Calle JL, Chaparro M, Marín-Jiménez I, García-Castellanos R, et al. Induction of psoriasis with anti-TNF agents in patients with inflammatory bowel disease: A report of 21 cases. *J Crohn's Colitis.* 2012; 6:518–23. doi:10.1016/j.crohns.2011.10.007
7. de Mattos ABN, Cerneski MM, Reichert S, Jaeger CN. Use of adalimumab, a TNF-alpha inhibitor, is associated with paradoxical psoriasis: Two clinical case reports. *Brazil J Case Rep.* 2023; 3:12–5. doi:10.52600/2763-583X.bjcr.2023.3.2.12-15
8. Zekey E, Karabagli P, Kurtipek GS. Adalimumab induced severe paradoxical psoriasis in a patient with ankylosing spondylitis. *Cukurova Med J.* 2022; 47: 1768–70. Doi:10.17826/cumj.1170774
9. Feagan BG, Sandborn WJ, Gasink C, Jacobstein D, Lang Y, Friedman J, et al. Ustekinumab as induction and maintenance therapy for

- Crohn's disease. *N Engl J Med.* 2016; 375:1946-60. <https://doi.org/10.1056/NEJMoa1602773>
10. Puig L. Paradoxical Reactions: Anti-tumor necrosis factor alpha agents, ustekinumab, secukinumab, ixekizumab, and others. *Curr Probl Dermatol.* 2018;53:49-63. doi: 10.1159/000479475.
  11. Reich K, Gooderham M, Thaçi D, Crowley JJ, Ryan C, Krueger JG, et al. Risankizumab compared with adalimumab in patients with moderate-to-severe plaque psoriasis (IMMvent): A randomised, double-blind, active-comparator-controlled phase 3 trial. *Lancet (London, England).* 2019; 394:576–86. doi:10.1016/S0140-6736(19)30952-3.
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**Author Contribution:**

DAA: Agreement to be accountable for all aspects of the work.