

Treatment of Concomitant Alopecia Areata and Crohn's disease in a young child with Tofacitinib: Case Report

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CASE TIMELINE

INTRODUCTION

- TNF- α antagonists such as infliximab are used to treat Inflammatory Bowel Disease.
- TNF- α antagonists have been implicated in the development of several adverse reactions including alopecia areata (AA).
- AA is an autoimmune disease mediated by cytotoxic T cell driven inflammation targeting hair follicles.
- Pediatric AA is the severe form of AA.
- Tofacitinib, a Janus kinase 3 inhibitor has been shown to block the downstream pathways in production of inflammatory cytokine in patients with AA.
- Tofacitinib is approved only for treatment of Ulcerative Colitis in adults.
- Trials are still ongoing for the treatment of Crohn's Disease with Tofacitinib.
- The aim of this case report is to describe that Janus Kinase 3 inhibitor can be used to not only treat the Alopecia Areata but also Crohn's disease in children.

CASE PRESENTATION

In May 2021, a 9-year-old female was diagnosed with Crohn's Disease with upper and lower endoscopy. Patient began treatment with infliximab infusions in June 2021 and began experiencing hair loss in December 2021 after 6 infliximab infusions. Hair loss progressively worsened as infusions continued despite biotin supplementation and topical treatment with fluocinonide solution, ketoconazole shampoo, and clobetasol gel and patient was diagnosed with alopecia areata. CD was found to be in clinical remission 12 months after initiation of infliximab. After 6 infusions, patient was transitioned from infliximab to tofacitinib due to suspicion that hair loss was secondary to infliximab infusions. Patient had significant improvement in hair growth with complete resolution of AA 8 months after starting tofacitinib.

CONCLUSION

- Both Infliximab and CD itself may have precipitated AA in our patient.
- The development of AA following infliximab treatment and the timeline of the patient's symptom resolution suggests that the patient's alopecia likely developed secondary to her infliximab infusions.
- To our knowledge this is the youngest patient with concomitant CD and AA who responded well to Tofacitinib.
- This case shows that Tofacitinib should be considered for AA and CD in pediatric patients.

Diagnosed with Crohn's Disease after upper and lower endoscopy

First infliximab infusion 100 mg (5mg/kg)

6 months after infliximab initiation

- Hair loss begins

12 months after infliximab initiation

- Clinical remission of CD – No gross lesions noted on upper endoscopy
- Initiated on Biotin

16 months after infliximab initiation

- Dermatologist diagnoses patient with alopecia areata
- Patient is initiated on fluocinonide solution & ketoconazole shampoo

22 months after infliximab initiation

- Hair loss continues to worsen

Last infliximab (infliximab-dyyb) infusion

Begins infusion treatment with tofacitinib 5mg twice daily

1 month after transition to tofacitinib

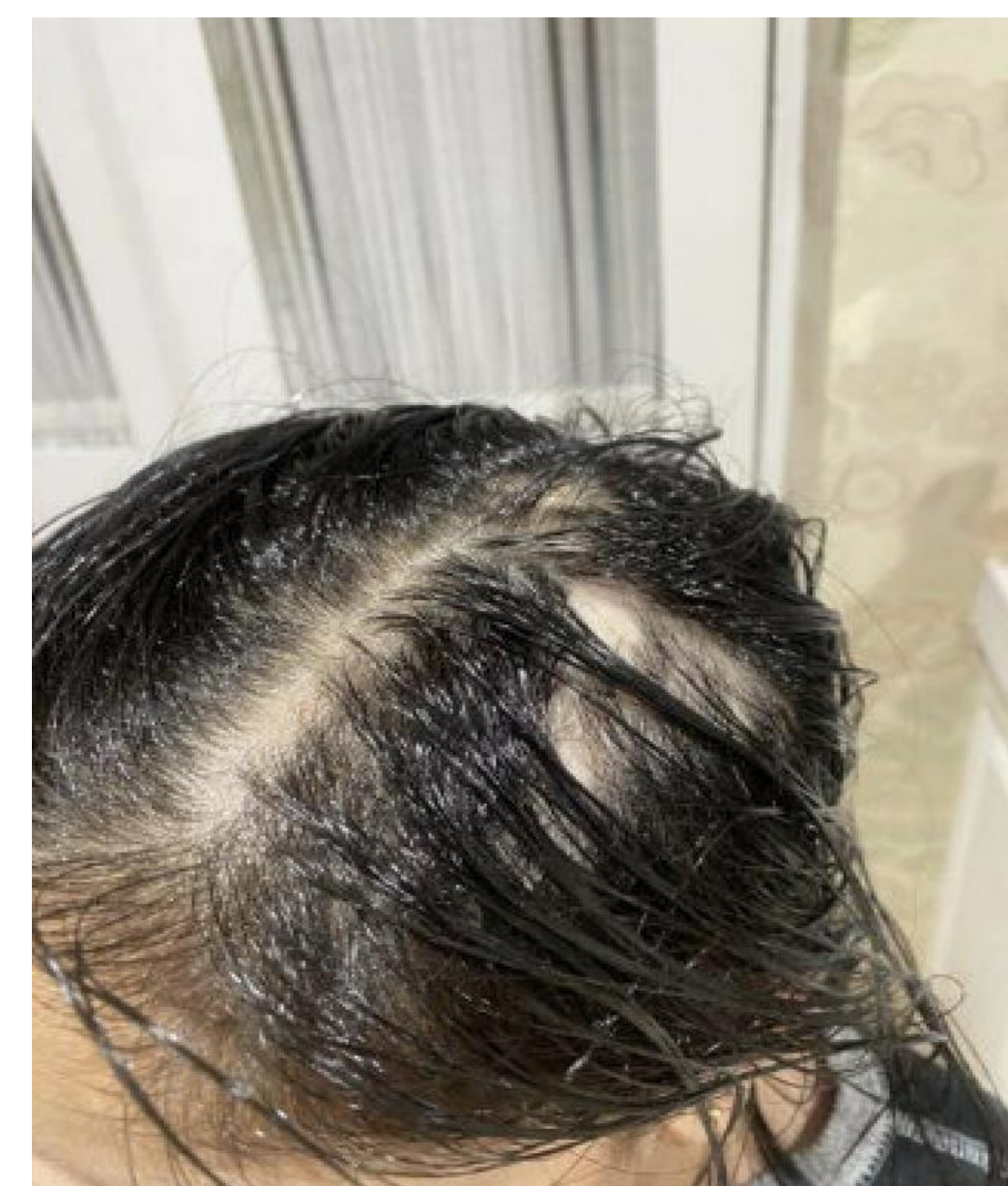
- Significant improvement of hair loss

6 month after transition to tofacitinib

- CD remains in clinical remission
- Upper and lower endoscopy with biopsies were normal

8 months after transition to tofacitinib

- Complete resolution of AA



22 months after beginning infliximab treatment



1 month after transition to tofacitinib



17 months after transition to tofacitinib

REFERENCES

- Béné J, Moulis G, Auffret M, et al. Alopecia induced by tumour necrosis factor-alpha antagonists: description of 52 cases and disproportionality analysis in a nationwide pharmacovigilance database. *Rheumatology*. 2014; 53(8): 1465–1469.
- Cohen R, Tsang J, Hanauer S. Infliximab in Crohn's Disease: First Anniversary Clinical Experience. *The American Journal of Gastroenterology*. 2000; 95(12).
- Hyams J, Crandall W, Kugathasan S, et al. Induction and Maintenance Infliximab Therapy for the Treatment of Moderate-to-Severe Crohn's Disease in Children. *Gastroenterology*. 2007; (132):863– 873.
- Lee H-H, Song I-H, Friedrich M, et al. Cutaneous side-effects in patients with rheumatic diseases during application of tumour necrosis factor- α antagonists. *British Journal of Dermatology*. 2007; 156(3): 486-491.
- Mounessa J, Caravaggio J, Domozych, R, et al. Commonly prescribed medications associated with alopecia. *Journal of the American Academy of Dermatology*. 2023; 88(6):1326-1337.
- Tauber M, Buche, S, Reygagne, P, et al. Alopecia areata occurring during anti-TNF therapy: A national multicenter prospective study. *Journal of the American Academy of Dermatology*. 2014. 70(6): 1146-1149.
- Udkoff J & Cohen P. Severe Infliximab-Induced Alopecia and Scalp Psoriasis in a Woman with Crohn's Disease: Dramatic Improvement after Drug Discontinuation and Treatment with Adjuvant Systemic and Topical Therapies. *Dermatology and Therapy*. 2016; 6: 689-695.
- Udkoff J & Cohen P. Tumor necrosis factor-induced alopecia: alternative pathology and therapy. *Dermatology Online Journal*. 2017; 23(6).