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# A case series of tumor necrosis factor inhibitor-induced psoriasis in patients with hidradenitis suppurativa

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To the Editor:

Tumor necrosis factor (TNF) inhibitors are effective treatments for a number of chronic inflammatory skin conditions, including hidradenitis suppurativa (HS), [1]. TNF inhibitor-induced psoriasis has been described for 15 years but remains poorly understood [2].

In a previous retrospective review of 102 patients with TNF inhibitor-induced psoriasis, the mean age of onset was 40 years and there was a female predominance (73.5%), [2]. The most common underlying conditions were Crohn disease (in 48% of cases) and rheumatoid arthritis (in 24.5% of cases). Infliximab was implicated in 52% of cases [2]. Plaque-type psoriasis (49.5%), scalp psoriasis (47.5%), and palmoplantar pustulosis (41%) were the most common subtypes of induced psoriasis [2]. Topical medications alone improved or resolved TNF inhibitor-induced psoriasis in most patients (63.5%) If topicals failed, cyclosporine and methotrexate (>10mg weekly) were often effective [2].

TNF-induced psoriasis is not well characterized in patients being treated for HS. In three HS patients without psoriasis who developed psoriasis after TNF therapy with adalimumab, psoriasiform skin lesions contained neutrophils, mast cells, macrophages, and monocytes commonly seen in the early phases of psoriasis development [3]. We assessed the frequency and character of induced psoriasis in patients treated with TNF inhibitors for HS.

A retrospective chart review was performed on patients diagnosed with psoriasis (ICD10-CM-L40.9) and HS (ICD10-CM-L73.2), who were prescribed a TNF inhibitor (ICD10-CM-Z79.811) between February 2017 and February 2022 at Atrium Wake Forest Baptist Health Medical Center. We gathered information on sex, age, race, ethnicity, date of HS diagnosis, initial HS symptoms, type of TNF inhibitor, start date of TNF inhibitor treatment, dosage of TNF inhibitor, date of psoriasis diagnosis, psoriasis subtype, other treatments for psoriasis, and treatment response. We determined the percentage of patients with a primary diagnosis of HS who subsequently developed psoriasis after being treated with a TNF inhibitor. Among patients affected by this reaction, we determined the percentage of those treated with a specific type of TNF inhibitor, its dose, treatments, and response to treatment.

We identified 32 patients treated with a TNF inhibitor for HS. Owing to lack of available information, 11 patients were excluded. Patients included had a mean age of 40, 90% female, 10% male, 81% White, and 19% African American/Black. Of the 21 remaining patients, 19 were on adalimumab and two patients were on etanercept; of these, six patients (28.5%) with a primary diagnosis of HS developed psoriasis after treatment with adalimumab. Five of the patients on adalimumab were dosed with 40mg weekly (83.3%) and one was dosed with 40mg twice

weekly (16.6%). The subtypes of psoriasis in these patients included scalp psoriasis (30%), pustular psoriasis (16.6%), and plaque psoriasis (50%). The psoriasiform reactions were treated with clobetasol solution or ointment, triamcinolone, methotrexate, ustekinumab, phototherapy, and cyclosporine. Half of the patients had a partial response to treatment and the other half had a complete response.

In our retrospective chart review, development of psoriasiform lesions was common in patients with HS after treatment with adalimumab. Although a limitation of our study was that it was performed at a single center, the incidence of TNF inhibitor induced psoriasis was also common at a separate academic medical center (20%), [4]. Although an immune response driven by plasmacytoid dendritic cells has been suggested, the pathogenesis of this psoriasiform reaction is still unclear [3]. Previous studies have proposed a possible genetic predisposition in HS patients who develop psoriasiform reactions after treatment with a TNF inhibitor, specifically in the small nucleotide pleomorphisms (SNPs) in *ERAP1*, *NFKBIZ*, and *TNFAIP* genes [3]. Another proposed mechanism of action is the disruption of the IL17/IL23 axis, since the level of IL17 is typically low in more severe cases of HS and may increase with the use of a TNF inhibitors [4]. Hidradenitis suppurativa patients may be at an increased risk of subsequent psoriasis after TNF inhibitor treatment.

## Potential conflicts of interest

Steve Feldman has received research, speaking and/or consulting support from a variety of companies including Galderma, GSK/Stiefel, Almirall, Leo Pharma, Boehringer Ingelheim, Mylan, Celgene, Pfizer, Valeant, Abbvie, Samsung, Janssen, Lilly, Menlo, Merck, Novartis, Regeneron, Sanofi, Novan, Qurient, National Biological Corporation, Caremark, Advance Medical, Sun Pharma, Suncare Research, Informa, UpToDate and National Psoriasis Foundation. He is founder and majority owner of www.DrScore.com and founder and part owner of Causa Research, a company dedicated to enhancing patients' adherence to treatment. Rita Pichardo worked on the advisory board at Novartis. Katherine Kelly, and John Edminister declare no conflicts of interest.

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