

# Guttate Psoriasis Following COVID-19 Infection

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## PRACTICE POINTS

- Guttate psoriasis is the only type of psoriasis that originates from viral infection.
- Dysregulation of proinflammatory cytokines during COVID-19 infection in our patient led to development of guttate psoriasis 3 weeks later.

Guttate psoriasis is a subgroup of psoriasis that most commonly presents as raindroplike, erythematous, silvery, scaly papules. Guttate psoriatic flares may follow rhinovirus or COVID-19 infection due to dysregulation of the innate immune response. We describe the case of a patient who experienced a moderate psoriatic flare 3 weeks after diagnosis of SARS-CoV-2 infection. We discuss the dysregulation of proinflammatory cytokines that we believe triggered this flare and the treatment regimen for our patient.

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Psoriasis is an inflammatory skin condition affecting 1% to 5% of the world population.<sup>1</sup> Guttate psoriasis is a subgroup of psoriasis that most commonly presents as raindroplike, erythematous, silvery, scaly papules. There have been limited reports of guttate psoriasis caused by rhinovirus and COVID-19 infection, but a PubMed search of articles indexed for MEDLINE using the term *COVID-19 guttate psoriasis* yielded only 3 documented cases of a psoriatic flare secondary to SARS-CoV-2 infection.<sup>1-4</sup> Herein, we detail a case in which a patient with mild SARS-CoV-2 infection who did not have a personal or family history of psoriasis experienced a moderate psoriatic flare 3 weeks after diagnosis of COVID-19.

## Case Report

A 55-year-old woman was diagnosed with COVID-19 after SARS-CoV-2 RNA was detected from a nasopharyngeal swab. She reported moderate fatigue but no other symptoms. At the time of infection, she was not taking medications and reported neither a personal nor family history of psoriasis.

Three weeks after the COVID-19 diagnosis, she reported erythematous scaly papules only on the trunk and backs of the legs. Two months after the COVID-19 diagnosis, she was evaluated in our practice and diagnosed with guttate psoriasis. The patient refused biopsy. Physical examination revealed that the affected body surface area had increased to 5%; erythematous, silvery, scaly papules were found on the trunk, anterior and posterior legs, and lateral thighs (Figure). At the time of evaluation, she did not report joint pain or nail changes.

The patient was treated with triamcinolone acetone cream 0.1% twice daily for 2 to 4 weeks. The guttate psoriasis resolved.

## Comment

A sudden psoriatic flare can be linked to dysregulation of the innate immune response. Guttate psoriasis and generalized plaque-type psoriasis are postulated to have similar pathogenetic mechanisms, but guttate psoriasis is the only type of psoriasis that originates from viral infection. Initially, viral RNA will stimulate the toll-like receptor 3 protein, leading to increased production of the pathogenic cytokine IL-36 $\gamma$  and pathogenic chemokine CXCL8 (also known as IL-8), both of which are biomarkers for psoriasis.<sup>1</sup> Specifically, IL-36 $\gamma$  and CXCL8 are known to further

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stimulate the proinflammatory cascade during the innate immune response displayed in guttate psoriasis.<sup>5,6</sup>

Our patient had a mild case of COVID-19, and she first reported the erythematous and scaly papules 3 weeks after infection. Dysregulation of proinflammatory cytokines must have started in the initial stages—within 7 days—of the viral infection. Guttate psoriasis arises within 3 weeks of infection with other viral and bacterial triggers, most commonly with streptococcal infections.<sup>1</sup>

Rodríguez et al<sup>7</sup> described a phenomenon in which both SARS-CoV-2 and Middle East respiratory syndrome, both caused by a coronavirus, can lead to a reduction

of type I interferon, which in turn leads to failure of control of viral replication during initial stages of a viral infection. This triggers an increase in proinflammatory cytokines and chemokines, including IL-36 $\gamma$  and CXCL8. This pathologic mechanism might apply to SARS-CoV-2, as demonstrated in our patient's sudden psoriatic flare 3 weeks after the COVID-19 diagnosis. However, further investigation and quantification of the putatively involved cytokines is necessary for confirmation.

## Conclusion

Psoriasis, a chronic inflammatory skin condition, has been linked predominantly to genetic and environmental factors. Guttate psoriasis as a secondary reaction after streptococcal tonsillar and respiratory infections has been reported.<sup>1</sup>

Our case is the fourth documented case of guttate psoriasis secondary to COVID-19 infection.<sup>2-4</sup> However, it is the second documented case of a patient with a diagnosis of guttate psoriasis secondary to COVID-19 infection who had neither a personal nor family history of psoriasis.

Because SARS-CoV-2 is a novel virus, the long-term effects of COVID-19 remain unclear. We report this case and its findings to introduce a novel clinical manifestation of SARS-CoV-2 infection.

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A and B, Guttate psoriasis that manifested as erythematous, silvery, scaly papules 3 weeks after COVID-19 infection.