

## Psoriasis and COVID 19: Exacerbation Following Hydroxychloroquine: A Case Report

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DOI: [10.36347/sasjm.2023.v09i01.006](https://doi.org/10.36347/sasjm.2023.v09i01.006)

| Received: 30.11.2022 | Accepted: 06.01.2023 | Published: 11.01.2023

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### Abstract

### Case Report

Psoriasis is a chronic and multisystemic inflammatory disease, several factors can trigger it or aggravate it, including certain drugs including hydroxychloroquine. This drug, widely prescribed for COVID 19 infection, can trigger a flare-up of psoriasis, particularly the pustular form. Furthermore, patients with coronavirus 2019 infection, have increased plasma concentrations of inflammation-related cytokines which are also implicated in the etiopathogenesis of psoriasis, this may suggest that COVID-19 may be a new entity which exacerbates psoriasis. We report the observation of a patient who presented with psoriasis exacerbated by taking hydroxychloroquine following infection with covid 19.

**Keywords:** Pustular psoriasis, Sars Covid 19, hydroxychloroquine, exacerbation.

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## INTRODUCTION

Psoriasis is a chronic and multisystemic inflammatory disease, several factors can prevent or worsen it, including certain medications.

We report the observation of a patient who presented with psoriasis exacerbated by taking hydroxychloroquine following infection with covid 19.

## CASE REPORT

A 48-year-old patient, followed for psoriasis for 20 years, hospitalized in the dermatology department for two episodes of pustular psoriasis in 2014 and in 2018, with joint damage treated with methotrexate, who presented for 3 weeks a flare-up of pustular psoriasis associated with arthralgia in the elbows and wrists.

On examination, she presented erythematous scaly lesions dotted with pustules on the elbows, knees, thighs, two lumbar regions and abdomen, the rest of the somatic examination found an intertrigo under the left breast. A local treatment based on topical corticosteroids, antifungal on the intertrigo associated with oral isotretinoin was initiated. The evolution was

good with disappearance of the majority of the skin lesion (Figure 1).

On the 7th day of hospitalization, the patient presented with an acute fever associated with a dry cough, a polymerase chain reaction (PCR) test for SARS-CoV-2 (COVID-19) was done with a positive result, isolation and treatment according to the national protocol for Covid 19 infection was initiated, including hydroxychloroquine at a dose of 200mg\*3 per day. On the 10th day, the patient presented with a flare-up of her psoriasis made up of pustular lesions on an erythematous background affecting the two upper limbs, the thighs, the trunk, the abdomen and the neck (Figure 2). Biologically, a major inflammatory syndrome with a C-reactive protein (CRP) at 332, hydroxychloroquine was stopped, with local treatment and resumption of injectable methotrexate at a dose of 12.5 mg per week. The evolution was marked by generalized desquamation accompanied by apyrexia and a progressive normalization of the biological assessment. A background of generalized erythema persisted for several days. Healing was achieved after two weeks.



**Figure 1: Before administration of hydroxychloroquine**



**Figure 2: On the 10th day of hydroxychloroquine**

## DISCUSSION

Psoriasis is a chronic inflammatory skin disease with a strong genetic predisposition and autoimmune pathogenic characteristics.

The hallmark of psoriasis is sustained inflammation that leads to uncontrolled keratinocyte proliferation and dysfunctional differentiation.

Environmental factors (stress, climate, infection, trauma, certain medications, etc.) would allow the expression of psoriasis in genetically predisposed subjects.

The exacerbation of psoriasis in this patient can be explained by several factors. An *in vitro* study conducted by Wolf *et al.*, [1] noted hyperproliferation and keratinization on skin cultures induced by HCQ. This may be due to the inhibitory effect of HCQ on epidermal transglutaminase activity, which leads to an initial breakdown of the epidermal barrier. The resulting epidermal proliferation aimed at restoring the barrier can lead to the induction or aggravation of psoriasis. Additionally, HCQ can promote IL-17 production via

p38-dependent release of IL-23, resulting in increased keratinocyte growth [2].

Furthermore, they can interfere with the process of cholesterol metabolism, which is crucial for the structural and functional integrity of the stratum corneum [3]. Finally, our case was female, which is consistent with other studies where the majority of cases were predominantly female (77.8%,  $n = 14$ ). Since autoimmune diseases have more prevalence in women, the role of sex hormones can be suggested.

The results of these studies will be essential to determine whether treatment with HCQ is significantly associated with exacerbation, relapse or new onset of psoriasis.

Recently, a study was done whose aim was to perform a systematic review of previously reported cases of onset, exacerbation or relapse of psoriasis after treatment with HCQ, in total 15 studies met the criteria for eligibility and were used for data collection and analysis of 18 patients.

Of the 18 patients, 50.0% (n=9) experienced de novo psoriasis, in 27.8% (n=5) exacerbation of psoriatic symptoms and 22.2% (n=4) had relapse of psoriasis after administration of HCQ. Of the 9 cases of de novo psoriasis, 33.3% were pustular (n = 3), 11.1% inverse (n = 1), 11.1% erythrodermic (n = 1) and in 44.4% of cases the type of psoriasis was not recorded (NR, n = 4). [4].

Another study was done on the prevalence of adverse effects of HCQ using a validated method of causality assessment. Of the 102 patients included treated with HCQ, 55 reported at least one adverse effect potentially linked to HCQ. This shows that the adverse effects of HCQ are frequent, since more than one out of two patients reports at least one adverse effect. Among the 91 side effects reported, only 59 (65%) had an intrinsic imputability score I greater than 2 according to the French imputability method, which means that for more than a third of the adverse effects the imputability of the HCQ was low (I = 1 or 2; n = 27) or none (I = 0; n = 5). [5].

As a result, it can be hypothesized that hydroxychloroquine, a commonly used drug for COVID-19 infection, may lead to a worldwide increase in the number of psoriasis whose prevalence is between 1% and 3%. This condition may lead clinicians to new treatments without immunosuppressive properties [6].

Further studies to examine the safety profile of HCQ, particularly in patients with psoriasis, are desperately needed, before its potential use for COVID-19 infection. Given the lack of rigorous evidence available, further studies with larger sample sizes are needed to confirm the reported results.

On the other hand, infections are known to trigger psoriasis, especially the pustular form. Patients with SARS-CoV2, which have been reported recently, have increased plasma concentrations of inflammation-related cytokines, including interleukins 2, 7, and 10 and TNF alpha, with decreased expression of IFN gamma leading to cytokine storm, the increase of these cytokines in COVID-19, which are also charged in the etiopathogenesis of psoriasis, may suggest that COVID-19 may be a new entity that exacerbates psoriasis vulgaris [7].

## CONCLUSION

Psoriasis patients should be aware that SARS-CoV-2 infection can lead to a flare-up of psoriasis, which may occur due to discontinuation of psoriasis treatments, treatment of COVID-19 with medications antimalarials, or due to the triggering of inflammation in the setting of COVID-19 disease [8].

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