

# Childhood vitiligo developing after COVID-19 infection

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## Abstract

Both COVID-19 and vaccinations against it have been related to immune cutaneous manifestations. Here, we present a case of childhood vitiligo, developed after a COVID-19 infection.

## Introduction

COVID-19 and vaccinations against it have been linked to immune cutaneous manifestations, mostly presenting similar clinical pictures.<sup>1</sup>

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Among the immune skin reactions associated with COVID-19 vaccines, hypopigmentation and vitiligo have been extensively reported.<sup>2</sup> Conversely, reports of vitiligo following COVID-19 itself are scarce up to date, and completely lacking in children.<sup>3,4</sup> Herein, we present a case of childhood vitiligo (CV) developing shortly after COVID-19 infection.

## Case Report

A 10-year-old girl presented to the dermatology clinic with a hypopigmented macule that developed for two months on her eyelid (Figure 1).

The lesion appeared 10 days after the onset of the symptomatic COVID-19 infection, as confirmed by molecular testing of viral RNA on a nasopharyngeal swab. COVID-19 symptoms lasted almost 10 days and included a high fever (39.5°C), malaise, asthenia, and headache.

The patient had no family or personal history of vitiligo or autoimmune diseases. Her medical history was unremarkable except for the recent COVID-19 infection.

On clinical examination, an oval, milky-white macule involving the whole right upper eyelid was observed, as was the presence of white discoloration of the hair at the upper side of the lesion. Characteristic white fluorescence at Wood lamp examination confirmed the diagnosis of vitiligo and showed definite delimitation of the hypopigmented macule, which appeared well demarcated medially and presented peripheral islands of hypopigmentation laterally, suggesting a still active disease (Figure 2).

## Discussion and Conclusions

Vitiligo is an acquired pigmentary disorder affecting 0.06-2.28% of the global population and 0-2.16% of the pediatric population.<sup>5</sup> Almost 40% of patients have disease onset before the age of 12, which is defined as CV. In females, vitiligo usually has its onset during the first decade of life.<sup>5</sup>

Bearing in mind the high prevalence of vitiligo during childhood, especially in girls, a casual association between vitiligo and COVID-19 must be considered. However, the temporal association of the two events speaks in favor of a possible link, as does the well-documented link between vitiligo and COVID-19 vaccination described in the literature.

Indeed, COVID-19 infection may induce a pathogen-specific immune response that targets the host's melanocytes, as previously suggested. The same process is supposed to take place after COVID-19 vaccination, where cross-reactivity to viral antigens has been advocated as a plausible vitiligo etiopathogenic mechanism.<sup>3,4</sup>

Notably, COVID-19 infection has been linked to immune dysregulation, causing an immune shift towards cytotoxic CD8<sup>+</sup> T lymphocytes, similar to the immune dysregulation described

already in vitiligo.<sup>4,6</sup> Moreover, augmented oxidative stress caused by COVID-19 infection may be linked to the etiopathogenesis of vitiligo as well as COVID-19 immune sequelae, including cytokine storm-induced organ damage. Hence, a possible link between COVID-19-induced phenomena and vitiligo onset emerges, with oxidative stress as well as cytotoxic immune shift possibly playing a role in both conditions.



**Figure 1.** Vitiligo lesion consisting of a milky-white macule of the eyelid and white hair.



**Figure 2.** Characteristic white fluorescence at Wood lamp examination of the macule of vitiligo. As the patient's family was planning a vacation at the beach, the patient was momentarily addressed to heliotherapy until the upcoming follow-up visit.

Indeed, the pathogenesis of vitiligo itself is still being debated. Especially in its segmental variant, vitiligo is thought to represent an autoimmune response targeting melanocytes with somatic mutations. Infections are hypothesized as potential vitiligo triggers, causing oxidative stress and an immunological shift towards CD8+ cytotoxic cell immunity.<sup>6</sup> We suggest that clinicians be aware of the possibility of this link to help them correctly diagnose and manage vitiligo and gain more and more insight into its still widely unknown etiopathogenesis.

## References

1. Burlando M, Herzum A, Micalizzi C, et al. Cutaneous reactions to COVID-19 vaccine at the dermatology primary care. *Immun Inflamm Dis* 2022;10:265-71.
2. Ciccarese G, Drago F, Boldrin S, et al. Sudden onset of vitiligo after COVID-19 vaccine. *Dermatol Ther* 2022;35:e15196.
3. Herzum A, Micalizzi C, Molle MF, Parodi A. New-onset vitiligo following COVID-19 disease. *Skin Health Dis* 2022;2:e86.
4. Schmidt AF, Rubin A, Milgraum D, Wassef C. Vitiligo following COVID-19: a case report and review of pathophysiology. *JAAD Case Rep* 2022;22:47-9.
5. Krüger C, Schallreuter KU. A review of the worldwide prevalence of vitiligo in children/adolescents and adults. *Int J Dermatol* 2012;51:1206-12.
6. Rashighi M, Harris JE. Vitiligo pathogenesis and emerging treatments. *Dermatol Clin* 2017;35:257-65.