

Postoperative Cutaneous Manifestations as the First Presentation of COVID-19 Infection or a Postvaccination Sequel

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Summary: Since its first emergence, coronavirus disease 2019 (COVID-19) took the world by surprise, causing more than two million deaths and 100 million infections to date. The virus's most prevalent clinical symptoms have become well known, yet the rarer symptoms, on the other hand, need to be more widely recognized. Various studies have reflected the possibilities of potential skin lesions being the presenting signs of COVID-19 infection. Acquaintance with the cutaneous presentations of COVID-19 may help in early diagnosis and management of infected patients. Herein we report two cases that presented for plastic surgical interventions in which skin manifestations were the first indicators of COVID-19 infection or postvaccination sequel. The cases were operated upon in different hospitals by different surgical teams. (*Plast Reconstr Surg Glob Open* 2022;10:e4163; doi: [10.1097/GOX.0000000000004163](https://doi.org/10.1097/GOX.0000000000004163); Published online 23 February 2022.)

Patients infected with respiratory viruses are known to develop viral exanthemata and other cutaneous displays, and those with coronavirus disease 2019 (COVID-19) infection are not exempt from these presentations.⁴ Eighty-eight patients were analyzed by dermatologists in Lombardy, Italy for cutaneous manifestations. Eighteen of these patients (20.4%) developed skin exhibitions. Of these, eight patients showed the skin exhibitions at the onset of disease, and ten after hospitalization. The cutaneous signs were rarely itchy and mostly involved the trunk region. These skin presentations were in the form of an erythematous rash (14 patients), widespread urticaria (three patients), and chicken pox–like vesicles in one patient. No association between the disease severity and cutaneous involvement was noted.⁵ There have been several reports of COVID-19 positive cases presenting with or developing an urticarial rash. In a review conducted by Wollina et al, it was concluded that an urticarial rash

in combination with pyrexia is suggestive of infection with the novel coronavirus due to the ensuing findings. In Belgium, two cases presented with urticarial rash and pyrexia and tested positive for COVID-19. A 32-year-old and a 28-year-old woman both presented with an urticarial rash in Spain at 6 and 10 days, respectively, from the onset of disease. Also, in a larger study in Spain, 19% of COVID-19 positive patients were shown to present with an urticarial rash. These cases, however, were correlated with disease severity. In Italy, three severely ill COVID-19 patients presented with a widespread urticarial rash. In France, only two of 103 cases presented with an urticarial rash. A 2-month-old child in Spain also developed a skin rash that disappeared after 9 days.⁶ Rebollar also reports a case in which an erythematous rash manifested after hospitalization for COVID-19 infection (20 days after the onset of symptoms), concluding that the cutaneous manifestations are similar to the cutaneous involvement that occurs during common viral infections.⁷

Having discussed cutaneous manifestations of COVID-19 infection, we will now move on to the skin presentations of vaccine reactions. Delayed skin reactions are rare postvaccination events, typically observed several days after the vaccination with mRNA-based COVID-19 vaccines. The reported incidence is 0.8%–1.0% after the first, and 0.2%–1.1% after the second dose. Hoff et al interestingly found that in the late lesions, the erythema was more clearly defined, with uneven morphology surrounding and inside the region. While the initial type of skin manifestation resembles an acute type I allergic reaction clinically, the one that appears later in time appears to reflect

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Fig. 1. Case 1: A 55-year-old patient presenting with tension in the anterior abdominal wall postoperatively with cutaneous redness over the trunk.

the involvement of an adaptive immune response, as suggested by previous publications.⁸

The American Academy of Dermatology and the International League of Dermatological Societies organized a study further characterizing the morphology of



Fig. 2. Case 1 after resolution of cellulitis.



Fig. 3. Case 2: A 56-year-old female patient with cellullitic cutaneous presentation after receiving the first dose of COVID-19 vaccination.

cutaneous reactions for both the first and second doses of the available mRNA vaccines. Between December 24, 2020 and February 14, 2021, they gathered relevant information for a total of 414 patients, and 71 cases were reported after receiving mRNA vaccines. Skin reactions most commonly stated were urticaria, local injection site reaction, and morbilliform rash. Other reported cutaneous reactions included delayed large local reaction, swelling, erythema, pain, erythromelalgia, flare of an existing dermatologic condition, vesicular, pernio/chilblains, zoster, angioedema, pityriasis rosea, filler reaction, vasculitis, contact dermatitis, rash in a breastfed infant, and petechiae.⁹

CASE REPORTS

Case 1

A 55-year-old female patient presented to our clinic for an abdominoplasty procedure. She had no significant prior medical history or family history. The surgery was performed under a general anesthetic with ceftriaxone antibiotic administration on induction of anesthesia. Two suction drains were secured in situ; the patient was discharged with the drains and a prescription of oral antibiotics the following day. The drains were removed in the outpatient clinic 48 hours postoperatively. Twenty-eight days after surgery, she developed a fever of 39°C, pain, rigors, and tension in the anterior abdominal wall with cutaneous redness over the trunk. On the same day, a pinhole-sized opening spontaneously formed

on the right side of the abdominoplasty wound, through which serous fluid drained. She was readmitted for hospitalization on postoperative day 29 and administered IV fluids and antibiotics. Laboratory investigations on admission showed total leucocyte count (TLC) of 11.0×10^9 per L and C-reactive protein (CRP) of 116 mg per dL. An abdominal ultrasound was performed, which revealed a fluid collection in the left groin. The patient was subsequently taken to the operating room and surgical intervention was carried out to drain the fluid. A 2-cm incision was made, and approximately 150 cm³ of serous fluid was evacuated. A drain was inserted through the incision. On day 30 from the abdominoplasty procedure, the redness was still extending, and laboratory findings showed a TLC of 16.0×10^9 per L and a CRP of 120 mg per dL. On postoperative day 31, the patient lost her sense of smell, and PCR testing confirmed infection with COVID-19 virus. Ascorbic acid 500 mg orally twice daily was prescribed to the patient as per the Egyptian national guidelines for COVID-19. Resolution of the redness started on day 32 and faded totally by day 35. CRP dropped to 20 mg per dL and TLC to 6.50×10^9 per L. The drains that were inserted during evacuation of the seroma were removed 8 days later.

Case 2

A 56-year-old female patient was treated for abdominal wall reconstruction using a prolene mesh repair for severe abdominal muscle weakness. The procedure was performed under general anesthetic with ceftriaxone IV antibiotics on induction. Two suction drains were secured in situ intraoperatively. The patient was discharged on day 2 postoperatively with the drains in situ and prophylactic oral antibiotics. On postoperative day 5, the drains were removed. She had an uneventful recovery period. The following week, she was reviewed in clinic, where she showed significant recovery with no signs of infection or collection. On postoperative day 15, the patient received her first dose of the COVID-19 vaccine. Four days following her vaccination (postoperative day 19), she developed cellulitis affecting the epigastric area, accompanied by a low-grade fever at 37.4°C. In addition, her CRP levels were 3.2 mg per L and her TLC 9.7×10^9 per L. She was started on ceftriaxone 1 g IM OD. Her clinical status was stable and did not preclude any hospital re-admission. On postoperative day 21, her temperature was back to normal; however, the erythema showed minimal improvement. On postoperative day 23, a repeated CRP test gave 3.4 mg per L, hence a decision was made to shift IM antibiotics to oral for a further 5 days. Finally, she was reviewed 1 week later, showing marked improvement.

DISCUSSION

Skin manifestations arise in a multitude of viral infections and can occasionally cause specific cutaneous

reactions. The pathophysiology in which the skin is affected by viral infections usually follows one of three routes: direct inoculation, regional spread from an internal focus, or systemic infection. Moreover, the resultant skin lesion can be due to viral replication in the skin or the host's immune response, which happens to hold a considerable part in this process.¹⁰

CONCLUSIONS

Cutaneous manifestations of infection by COVID-19 or inoculation with some of the available vaccines may be scarce, various, and perplexing. The authors believe that the findings in the aforementioned two cases may be attributed to infection with the novel corona virus and inoculation with the vaccine and see fit flagging them to other practitioners as a means for medics to be mindful of these presentations, even in subclinical or asymptomatic presentations, as it may catalyze earlier diagnosis and management or avoid confusion.

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