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Case Report

Atypical maculopapular rash as the initial sign of COVID-19: A case report from a COVID hospital

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ABSTRACT

Maculopapular rash mainly distributed over the trunk, is reported as the most common cutaneous manifestation in COVID-19 patients. The palms, soles, and face are usually spared. The rash is associated with itching in 56% of patients and is observed along with COVID-19 symptoms. Maculopapular rash is considered as a feature of severe COVID-19 and the lesions usually resolve in 10 days. We report a COVID-19 patient whose initial manifestation was an atypical maculopapular rash with urticarial wheals and erythema multiforme-like lesions. The patient denied drug intake before the onset of skin lesions. The rash was distributed over the face, palms, and soles in addition to the trunk and limbs. The patient had only mild symptoms of COVID-19. The rash lasted for 3 weeks and resolved with post-inflammatory hyperpigmentation and peeling of the skin of the fingertips. We report this case to highlight the possibility of skin rash being the initial sign of COVID-19.

Keywords: Atypical, COVID-19, Initial sign, Maculopapular rash

INTRODUCTION

The first documented case of coronavirus disease 2019 (COVID-19) emerged from the city of Wuhan in China in December 2019. COVID-19 is caused by severe acute respiratory syndrome coronavirus 2 which is an enveloped non-segmented positive-sense RNA beta coronavirus. Common symptoms of COVID-19 are fever, sore throat, cough, myalgia, nausea, vomiting, diarrhea, abdominal pain, anosmia, and ageusia.[1] Many skin manifestations of COVID-19 have been reported from across the world. These include maculopapular rash, urticaria, pseudo-chilblain, vesicles, livedo reticularis, petechiae, and erythema multiforme-like lesions.[2-4] Skin manifestation may occur early or later during the course of the disease. We report a patient who showed atypical maculopapular rash with urticarial wheals and erythema multiforme-like lesions as the initial sign of COVID-19.

CASE REPORT

A 24-year-old male patient presented with a history of severe headache and itching followed by red raised lesions of the left hand which progressed to involve forearms, thighs, legs, and abdomen since August 2, 2020. Two days later, he developed high-grade fever, redness and watery discharge from eyes, and redness of oral mucosa. The patient denied history of any drug intake including prophylaxis with alternative medicine before the onset of the skin lesions. There was no history

of international or interstate travel or contact with COVID-19 patients. The patient had no other symptoms suggestive of coronavirus infection. On August 6, he consulted a physician and was prescribed oral acyclovir and paracetamol which he took for 3 days. However, fever persisted and the rash extended to involve the whole body including face, palms, and soles. He consulted a dermatologist on August 10 and was treated with parenteral ceftriaxone, pheniramine maleate, oral doxycycline, and pantoprazole with the differential diagnoses of maculopapular rash or erythema multiforme due to rickettsial infection. The following day, the patient developed vomiting and breathlessness. He received a single dose of intravenous dexamethasone and was referred to our center.

On examination, the patient was afebrile and the vitals were stable. He had multiple discrete and confluent erythematous, edematous papules, and plaques of size ranging from 0.5 x 0.5cm to 5 × 4 cm involving the face, trunk, limbs, palms, and soles [Figures 1-3]. A few targetoid lesions were present on the forearms and soles. There was minimal congestion of conjunctivae. Other mucosae were spared. As per the standard protocol, rapid antigen test for COVID-19 was done which was positive.

Complete hemogram, erythrocyte sedimentation rate, urine microscopy, and renal and liver function tests were within normal limits. Screening for dengue and leptospirosis was negative. Antinuclear antibody profile and serology for hepatitis B, C, and human immunodeficiency virus were negative. IgM and IgG ELISA for herpes simplex virus 1 and 2 infections were negative. Weil-Felix reaction showed OX-K positivity in 1:320 titer which was suggestive of scrub typhus. Scrub typhus associated with COVID-19 was suspected and IgM ELISA for scrub typhus was done which was negative. A repeat Weil-Felix test performed to detect any rise in titer after 10 days was negative, thus ruling out the possibility of scrub typhus.

Figure 1: Multiple discrete and confluent erythematous, edematous papules, and plaques on the trunk.

The patient had chest pain for which chest X-ray and an electrocardiogram were taken which appeared normal. We made a final diagnosis of atypical maculopapular rash with urticarial and erythema multiforme-like lesions due to COVID-19. The patient was treated with oral prednisolone 40 mg daily, hydroxyzine 25 mg twice daily, and pantoprazole 40 mg once daily as he had extensive skin lesions and showed atypical features. Oral prednisolone was tapered rapidly (10 mg every 2 days). The skin lesions subsided gradually in 3 weeks. Rapid antigen test repeated after 10 days was negative. On follow-up visit, on September 2, the patient had post-inflammatory hyperpigmentation, erythema of palms, and peeling of the skin of the fingertips.

DISCUSSION

Recalcati reported skin lesions in 20.4% (18/88) of patients with COVID-19. Majority of skin lesions were maculopapular rash (77.8% or 14/18) followed by urticaria (16.7% or 3/18) and vesicles (5.6% or 1/18). Skin lesions were the initial manifestation in eight patients and 10 patients had lesions after hospital admission. Trunk was the most common site and the lesions were associated with minimal or absent

Figure 2: Multiple erythematous edematous papules and plaques on the palm.

Figure 3: Multiple erythematous and targetoid plaques on the sole.

itching. No correlation was observed between the presence of the skin lesions and the severity of the disease.[2] In a review by Sachdeva and Gianotti, skin lesions were the presenting feature in 12.5% (9/72) of patients. Maculopapular rash was seen in 36.1% (26/72) of patients.[3] A prospective study by Casas *et al*. found five major clinical patterns of rash including maculopapular rash (47%), urticaria (19%), pseudo-chilblain (19%), vesicles (9%), and livedo or necrosis (6%).[4]

Maculopapular rash is reported along with COVID-19 symptoms and is considered as a marker of severe disease. Trunk is the most common site for maculopapular rash. Face, palms, and soles are usually spared. It is associated with itching in 56% of patients and the lesions usually subside within 10 days.[4]

COVD-19 patients with urticaria are reported to have a better prognosis. The rash often appears before other symptoms of COVID-19 and is distributed all over the body including trunk, face, extremities, palms, and shoulder. Wheals subside within 1 week of treatment with oral antihistamines.[5]

Vesicles, when present, are seen as the initial presentation (15%) whereas pseudo-chilblain is known as a late feature (59%). Pseudo-chilblain, also called COVID fingers or toes, is characterized by painful or itchy erythematous or violaceous macules and papules, sometimes associated with bullae formation and swelling of digits. Pseudo-chilblain is seen in young patients, takes longer time to subside, and is considered as a feature of mild disease. Livedo or necrotic lesions are reported as late lesions in older patients and are often associated with more severe disease.[4]

Many atypical features are reported for maculopapular rash in COVID-19 patients. Casas *et al*. noticed perifollicular distribution and scaling of maculopapular rash in some of the patients. Pityriasis rosea-like lesions, purpuric lesions, infiltrated papules with pseudo-vesicular appearance resembling erythema elevatum diutinum, and erythema multiforme are also reported.[4] The atypical features seen in our patient included urticarial and erythema multiforme-like lesions along with maculopapular rash and distribution of rash over the face, palms, and soles in addition to trunk and limbs. The rash was the initial manifestation of infection which was followed by fever and conjunctival congestion 2 days later. He had mild symptoms of COVID-19 which subsided with symptomatic treatment; but the rash persisted for 3 weeks and subsided with post-inflammatory hyperpigmentation and peeling of the skin of the fingertips.

In previous reports of erythema multiforme-like lesions in COVID-19 patients, the lesions had developed following treatment; hence, the possibility of drug rash could not be ruled out.[6-8] We did not come across any previous reports of erythema multiforme-like lesions as the first sign of COVID-19. Jimenez-Cauhe *et al*. reported erythema multiforme-like eruptions in four female patients which developed 16 to 24 days after the onset of the symptoms of COVID-19. Trunk was the initial site of rash in all patients (forearm was the initial site in our patient) and all had erythematous and violaceous patches with a dusky center and a pseudo-vesicle. Typical target lesions were present only in two patients and palms and soles were spared. The authors observed that pseudo-vesicles and enanthem suggest an infectious rather than a drug etiology. All their patients were treated with systemic corticosteroids and lesions resolved within 2–3 weeks.[6] Vesicle-like lesions during the early phase of the disease might have prompted the clinician to start acyclovir in our patient.

Mechanism of skin lesions in COVID-19 is not fully delineated. Theories proposed include lymphocytic vasculitis caused by viral particles in blood vessels and an immune response to infection leading to Langerhans cell activation, vasodilatation, and spongiosis. Keratinocytes are considered as the secondary targets.[9] Accumulation of microthrombi in the dermal microvasculature, low-grade disseminated intravascular coagulation, and hypoxia leading to accumulation of deoxygenated blood are the proposed mechanisms for livedo-like lesions.[10]

The pathomechanism of erythema multiforme-like lesions in COVID-19 remains unknown. The mechanism proposed for herpes simplex virus-induced erythema multiforme is a cell-mediated immune reaction against viral antigen-positive cells that contain the HSV DNA polymerase gene. We believe a similar mechanism for COVID-19-induced erythema multiforme-like lesions.

The initial manifestation in our patient was skin lesions alone, hence, the diagnosis was delayed for a period of 10 days. This case is reported to alert the clinicians regarding the possibility of COVID-19 presenting with skin rash which could be atypical, extensive, and lasting longer than those seen in other viral infections.

CONCLUSION

The dermatologist should have a thorough knowledge about the atypical presentations of skin lesions in COVID-19 so that they can lend a helping hand in the early diagnosis of the disease, which is of utmost importance in preventing the disease spread, morbidity, and mortality.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

Dr Koyakutty Abdul Samad and Dr Keerankulangara Devi are on the editorial board of the Journal.

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