our observation and research will allow us to increase this knowledge.

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The patients in this manuscript have given written informed consent to the publication of their case details.

Conflicts of interest

The authors declare that there are no conflicts of interest related to this article. Dr. de Perosanz-Lobo, Dr Fernandez-Nieto, Dr. Burgos-Blasco, Dr. Selda-Enriquez, Dr. Carretero, Dr. Moreno and Dr. Fernández-Guarino have nothing to disclose.

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Urticaria (angioedema) and COVID-19 infection

Editor,

The novel coronavirus, otherwise known as COVID-19, has fast become a major health concern.[1,2] It has been reported that in addition to the conventional respiratory symptoms, patients also display skin manifestations such as Urticaria and angioedema.[3] Here, we present a case study of an elderly man who first presented with generalized pruritic hives ranging from 1.5 to 8.0 cm in diameter on the 5th of March 2020 (Fig. 1). The patient was investigated for another differential diagnosis of Urticaria such as parasitic and bacterial infection, for which negative results were found. On the 5th of March 2020, the patient reported these symptoms plus general malaise, fatigue, 37.90°C temperature and sore throat. Initial biochemical tests showed that the patient presented with low numbers of white blood cells (WBC) (WBC = 2.75×10^3). The most hallmark issue, which is lymphopenia, was detected in this case (lymphocytes = 852).[4] The other blood tests results were found to be normal. Real-time polymerase chain reaction (RT-PCR) for COVID-19 was not performed due to the time lapse between starting the symptoms and hospital admission. Therefore, the CT chest was carried out, which showed pneumonia with bilateral and subpleural areas of ground-glass opacification, consolidation affecting the lower lobes and confirming the diagnosis of COVID-19 (Fig. 2).

The relationship between Urticaria and infection has rarely been reported; this is probably due to the difficulty in establishing a cause and effect relationship.[5] Literature suggests that Urticaria and angioedema can be induced by viral and bacterial infection.[6,7] Urticaria has previously been associated with Cytomegalovirus, Herpesvirus and Epstein–Barr virus. A systematic review undertaken in 2016 found that viral infections could also act as potential triggers and sometimes even as the main etiologic agent in causing both acute and chronic Urticaria. Additionally, they found that in adults, hepatitis viral infections appeared to be the most frequent cause of Urticaria, whereas, in children, herpesviral infections were more frequent. To further support these data, it was also found that urticarial manifestations cleared up after the viral infections were treated or controlled.[5] Another study found that acute Urticaria is a common manifestation of viral infections for both children and adults but more so for children. Infections were also identified as the primary cause of Urticaria in approximately 37% of cases.[8]

Currently, there are no significant data regarding the association between skin manifestations such as Urticaria and COVID-19.[9] One study, in which a group of dermatologists analysed the cutaneous involvement in COVID-19, found that from 88 patients, 20.4% portrayed cutaneous manifestation. Of these, 8 patients developed the manifestations at disease onset whereas 10 developed the manifestations after hospitalization. These cutaneous

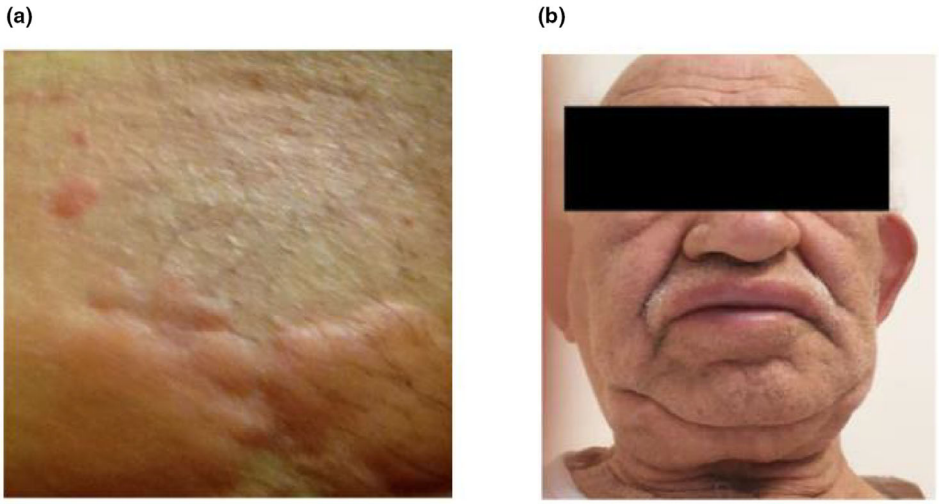

Figure 1 (a) shows cutaneous manifestation of urticaria. (b) Male patient displaying angioedema.

manifestations presented themselves as erythematous rash, widespread Urticaria and chickenpox-like vesicles. From these data, it can be speculated that the skin manifestations observed with COVID-19 may be similar to the cutaneous involvement that is often seen during common viral infections.[9] Another case was recently seen in Bangkok, a patient presented with only a skin rash, petechiae and a low platelet count and was thus diagnosed with Dengue fever; however, after the patient was admitted with respiratory problems, the correct diagnosis for COVID-19 was made.[10] This further highlights a possible association between skin manifestations and the novel coronavirus.

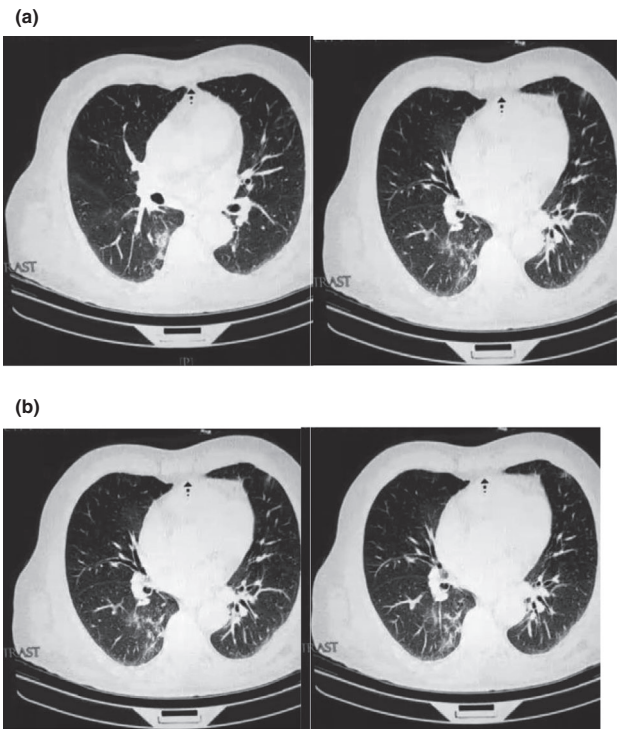

Figure 2 Patient CT chest at the time of hospital admission (a–d).

This report presents evidence regarding a possible association between urticarial skin manifestations in the early stages of COVID-19, and thus, its used as a possible early diagnostic indicator. The patient may initially present with a skin rash such as Urticaria, which can cloud the diagnosis, resulting in misdiagnosis for another common disease. Clinicians should take this report into considerations in order to prevent misdiagnosis as well to allow early diagnosis and better patient outcomes.

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Papular-purpuric exanthem in a COVID-19 patient: clinical and dermoscopic description

Editor

Acute coronavirus disease 2019 (COVID-19) has become a global health concern associated with a broad spectrum of clinical presentations. Cutaneous lesions in COVID-19 are still under continuous study. We report a case of COVID-19 (+) patient with late-onset cutaneous rash associated with a systemic inflammatory response during the second hospitalization.

A 39-year-old woman with known COVID-19 exposure presented to the emergency department with a seven-day history of fatigue, fever, dry cough and shortness of breath. Physical examination revealed pulmonary bilateral basal crepitations. Laboratory tests showed high levels of C-reactive protein 6.4 mg/dL (reference range, 0.1–0.5 mg/dL) and D-dimer 604 ng/mL (reference range, 0–500 ng/mL). Nasopharyngeal swab for COVID-19 was positive (genesig® Real-Time PCR assay, Primerdesign, UK). Chest computed tomography (CT) showed peripheral ground-glass opacities in the lower zones of the lungs and mild opacities in the right upper lobe. The patient was hospitalized with the diagnosis of pneumonia due to COVID-19. She had a previous history – since adolescence – of autonomic dysfunction with recurrent episodes of hypotension. She was treated with

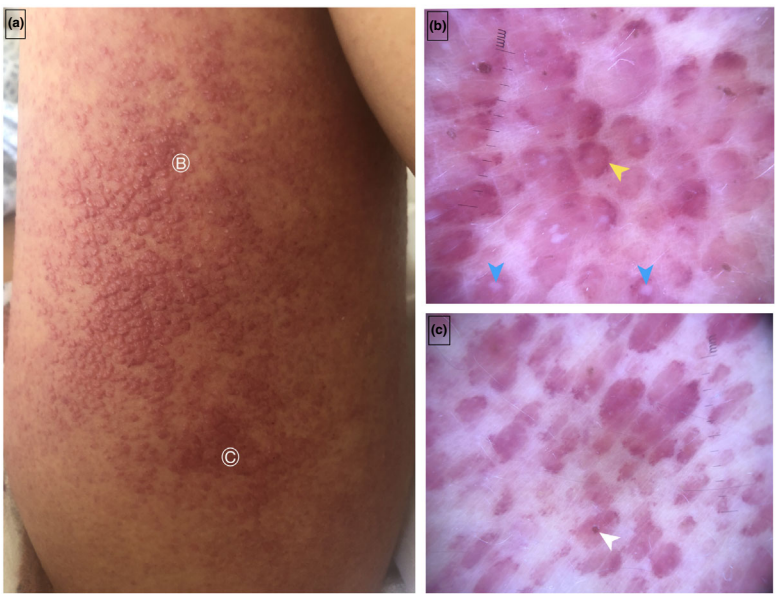

Figure 1 Papular-purpuric exanthem on COVID-19(+) patient (second day of readmission). Erythematous-purpuric papular rash on patient's left thigh. Biopsies were taken on zones B and C (a). Dermoscopy shows multiple monomorphic papules with an incomplete violaceous rim at the periphery (yellow arrowhead), and a central yellow globule in some papules (blue arrowheads) (b). Other papules had a central purpuric globule with an erythematous background (c).