

**Title: Polymorphic eruption of pregnancy as a possible COVID-19 manifestation**

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### **Conflict of Interest**

The authors report no conflict of interest. The authors alone are responsible for the content and writing of the paper. The authors have no financial relationships relevant to this article to disclose.

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Coronavirus disease 2019 (COVID-19) outbreak, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2), started in December 2019 in Wuhan, Hubei province of China. On March 11, 2020 the World Health Organization (WHO) declared it a pandemic.<sup>1</sup> According to WHO 80% of SARS-Cov-2 infections are mild or asymptomatic, 15% are severe (requiring oxygen therapy) and 5% are critical (requiring mechanical ventilation).<sup>2</sup> Fever and cough are the most common signs reported among symptomatic patients.<sup>3</sup> To date many cutaneous manifestations have been signaled: erythematous, varicelliform, morbilliform, petechial and urticarial rashes.<sup>4,5,6</sup> Pregnant women represent a high-risk population, due to physiological and mechanical changes characteristic of gestation. In particular T-helper2 (Th2) system dominance, though protecting the fetus, makes pregnant woman more susceptible to infections. The most common signs of SARS-Cov-2 infection during gestation, similarly to general population, are: fever, cough, dyspnea and lymphopenia.<sup>7</sup> However COVID-19 cutaneous manifestations in pregnant and lactating patients have not yet been adequately investigated in literature.

We report the case of a 32 years old Caucasian woman who presented to our attention complaining about a pruritic rash on abdomen and breasts. She also reported to be affected by headache and diarrhea for a few days. Five days before, at 39 and 2/7 weeks of

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pregnancy, she had delivered eutocically a baby girl with Apgar score of 9. Ten days before childbirth, giving the fact that her husband was affected by Covid-19, she had been screened for Covid-19: reverse transcriptase-polymerase chain reaction (RT-PCR) showed that she was positive. Her medical and pharmacological history was otherwise unremarkable. Physical examination revealed confluent non-scaly erythematous macules and papules limited to almost the entire skin surface of breasts and supraumbilical quadrants of the abdomen, with sparing of the linea alba (**Fig. 1**). She denied any respiratory symptom and her thoracic physical examination resulted normal. Her body temperature was 37.5°C and O<sub>2</sub> saturation 97% (pulse oxymetry). Routine laboratory findings were within normal limits, except for a mild sideropenic anemia. It was instituted a therapy with betamethasone (1 mg, 3 cp/die), but it was interrupted after 5 days because of cutaneous rash progression. In place of betamethasone it was prescribed methylprednisolone (16 mg, 2 cp/die for 3 days then tapered off slowly). Nowadays, after 3 days of therapy, cutaneous rash is considerably improved (**Fig. 2**). Her body temperature is 36.5°C and her thoracic physical examination remains normal. Nevertheless patient has been rescreened for Covid-19 and she results still positive.

Clinically patient's cutaneous eruption was consistent with the diagnosis of "Pruritic urticarial papules and plaques of pregnancy" (PUPPP): pruritic small erythematous and edematous macules and papules first started in the stretch marks of the trunk and then coalesced to form larger urticarial plaques often surrounded by blanched halos, with periumbilical sparing. PUPPP is the most common benign gestational dermatosis.

Nevertheless PUPPP presenting in the postpartum period, such as in our patient, is extremely rare. In fact in most cases it occurs during the last trimester of pregnancy, especially in primigravidas, resolving spontaneously after an average of 4 weeks or with delivery. In addition, the detection of abdominal striae distensae is relevant for differential diagnosis, however, these lesions were not observed in this case<sup>8</sup>.

Moreover our patient referred that fever, headache and diarrhea had started simultaneously with the cutaneous rash, suggesting the assumption of a role of SARS-Cov-2 in its pathogenesis. Furthermore prompt regression of the rash with high doses of corticosteroids, even if patient is still infective, leads us to suspect an hypersensitivity reaction against viral antigens as a possible pathogenetic mechanism.

In conclusion hormonal and immune changes characteristic of pregnancy could affect Covid-19 cutaneous manifestations and it would be advisable to investigate them, particularly in this critical period of pandemic.

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## Figure legends

**Figure 1** Erythematous macules and papules on the supraumbilical quadrants of the abdomen, with sparing of the linea alba.

**Figure 2** Considerable improvement of skin rash after three days of therapy.





