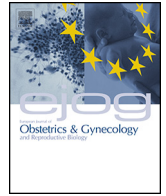




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## Correspondence

### Proteinuria in Covid-19 pregnant women: Preeclampsia or severe infection?



Dear Editor,

We report the case of a severe COVID-19 infection in which the diagnosis of preeclampsia (PE) was wrongly assumed because of proteinuria. This case raises both the question of the predictive value of proteinuria and the differential diagnosis between preeclampsia and the severe form of COVID-19 in pregnant women.

Despite numerous publications related to the pandemic, data remain limited regarding COVID-19 infections in pregnant women. The reported rates of severe infections range between 14% (severe pneumonia) to 5% (severe acute respiratory syndrome/SARS) [1]. There are no clear maternal risk factors predicting severe infection in pregnant woman.

A 26-year old woman (gravida 4, para 2) was admitted at 37 weeks of gestation with a 24-hs history of dry cough and headache. One of her relatives was infected by Covid-19. Until then the pregnancy was uneventful. At the time of hospital admission to the Covid-19 unit, her temperature was 37.9 °C, her cardiac heart rate 112 beats per minute, her blood pressure 148/83 mm/Hg, her respiratory rate 22 breaths per minute and her oxygen saturation 98% (ambient air breathing). Fetal heart rate was normal. Covid-19 nasopharyngeal tests were positive. On day 2, the 24-h urine protein test (performed due to arterial pressure >140/90 mmHg) was positive (1.2 g/24 h) and a suspected PE diagnosis was verified accordingly. On day 3 labour was induced on this indication in accordance with our national guidelines [2]. A C-section was performed because of arrested labor. A healthy 2700 g baby boy was born, with negative Covid-19 nasopharyngeal tests.

In the post-partum period, the patient developed a respiratory distress syndrome requiring her transfer to the Intensive Care Unit (ICU) on day 5. From day 7 to day 17, she needed invasive ventilation and extracorporeal membrane oxygenation. She fully recovered on day 22.

This case describes a complicated post-partum period in a woman with Covid-19. We suspected preeclampsia in this patient, which is a common disorder in pregnancy with hypertension and proteinuria related to placental dysfunction [2]. In their recent publication, Liu et al. highlighted the fact that proteinuria is more pronounced in non-pregnant Covid-19 patients than in healthy controls (28.57% Vs 11.11%;  $p < 0.05$ ) [3]. Proteinuria seems to be associated with Covid-19 severity [3]. Di Mascio et al. observed a 16.2% rate of preeclampsia in pregnancies affected by Coronavirus [4]. This is much more common than the 2–8% rate in the general population [2]. The first hypothesis that might be put forward is that of false positive diagnosis of PE, with the proteinuria in fact being linked to infection itself (as suggested by Mendoza et al. [5]). The second hypothesis that

could be considered is that of an increased placental dysfunction due to intravascular inflammation associated with the infection, leading to a prothrombotic state in the blood as well as in the placenta. Shanes et al. observed that placentae of women infected with SARS-CoV-2 demonstrate higher rates of maternal vascular malperfusion features [1]. In regions where the pandemic unfortunately still is active, it would be interesting to characterize more specifically the clinical significance of proteinuria. Biomarkers analysis such as that of the sFlt-1/PlGF ratio and/or pathological examination of the placenta could assist in further investigations. We regret such examinations were impossible in the described case due to the pandemic situation. However, based on the severe condition that developed post-partum in this patient, we recommend carefully monitoring proteinuria in pregnant women with Covid-19 infection.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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