

## Testing and Treatment of Pregnant women with COVID-19

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### Abstract

Every day the number of deaths and severe acute respiratory syndromes caused by the COVID-19 increase in many countries such as Italy, Spain, the U.K., USA, France, Iran...whereas the epidemic seems to be stopped in China. Some countries such as Germany, South Korea and China opted to test the maximum of people and seem to control better the epidemic. In France the ANSM (Autorité Nationale de Sécurité du Médicament) allowed the distribution of chloroquine and hydroxychloroquine to treat patients infected by the COVID-19 to hospitals. In USA, these treatments are also allowed to treat patients infected by the COVID-19. However, there are no clear guidelines to test or to treat patients. We suggest to test and treat symptomatic pregnant women infected by COVID-19.

**Keywords:** COVID-19; Pregnancy; Maternal-foetal transmission; Caesarean section for COVID-19; Newborns COVID-19 positive

### Introduction

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### COVID-19 status of women coming to the hospital

Health professionals are not sufficiently protected against the COVID-19 because they do not know the COVID-19 status of all patients but also their own status. As in many countries, we lack tests to identify COVID-19 infections. Indeed, pregnant women could be infected by the COVID-19 like other non-pregnant women [1,2]. In our practice, we observe an increase of the number of miscarriages, the threat of preterm delivery and the number of caesarean sections among women infected by the COVID-19 [2]. We lack data concerning the materno-fetal transmission of the COVID-19 and the treatments of infected pregnant women. In the face of the rapidly increasing number of infected pregnant women and newborns it is urgent to diagnose them and to treat them [3].

### Diagnosis of COVID-19 in pregnant women

By testing all patients presenting to hospitals by rapid tests confirmed by the PCR testing, we could identify infected women by COVID-19 [4, 5]. The PCR SARS-CoV-2 is performed on nasopharyngeal samples at admission. A positive PCR indicates a viral infection by COVID-19. Rapid identification of COVID-19 is crucial to outbreak containment efforts. Many rapid tests to diagnose COVID-19 are or will be available [6]. In France, USA, China and many other countries, health professionals can treat infected patients by hydroxychloroquine. In the pandemic context, our maternities are likely to be overwhelmed

by pregnant women infected by COVID-19. Clinical forms can vary from asymptomatic ones to pneumonia with acute respiratory distress.

### What treatment?

Currently, in clinical trials, COVID-19 positive patients are treated by chloroquine or hydroxychloroquine or antiviral drugs e.g. remdesivir. Some studies, with a small number of patients reported that the hydroxychloroquine reduces the viral carriage of infected patients [7]. A clinical trial in China showed that the chloroquine improves the clinical outcomes of infected patients and had a significant effect on viral clearance [8]. Chinese experts recommend treating all forms of Covid-19 pneumonia by chloroquine [9].

### Chloroquine and Hydroxychloroquine

Chloroquine (CQ) was used to treat malaria and is effective in limiting the replication of SARS-CoV-2 in vitro [4,10, 11,12]. Currently, Chloroquine is recommended to treat severe forms of SARS-Cov2 [12]. Hydroxychloroquine (HCQ) sulfate, a synthetic derivative of chloroquine (CQ) has chemical similarities to CQ suggesting that HCQ may be effective against SARS-CoV-2. In addition, HCQ is less toxic than CQ [9]. For many decades, HCQ is used to treat pregnant women in case of Lupus erythematosus. At the usual posology between 400 and 800 mg daily, no major complications were reported. [13].

CQ and HCQ inhibit both the entry of SARS - CoV-2 virus into the cell and intracellular traffic [14]. They also reduce the localized virions [14]. Virions' reduction is significantly greater with HCQ compared to CQ. HCQ inhibits cytokines such as interferon- $\beta$ , IL-6 and TNF- $\alpha$  [15]. The treatment by Hydroxychloroquine of infected patients by the COVID-19 seems to enable the regression of the disease in its moderate and severe forms [4, 16]. These case studies suggest the clearance of the virus from the nasopharynx more quickly and the regression of the clinical symptoms in most cases [17]. HCQ (commercial name

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Plaquenil) tested with COVID-19 infected patients showed reduction of the viral carriage six days after the inclusion compared to controls and the regression of clinical symptoms in most cases [17]. Concerning pregnant women, HCQ and CQ are not contraindicated and are not expensive.

### What are the risks of HCQ from its prescription for women infected by COVID -19?

Clinical contraindications of HCQ are retinal, cardiac diseases and breast feeding, porphyria, defect in G PD, hypokaliemia, hypoglycemia and pancytopenia (16). An electrocardiogram should be performed before the treatment. In case of electrocardiogram abnormalities, HCQ should not be prescribed. The recommended posology is 200 mg x 2 per 24 hours for 10 days in-case of infection by COVID-19 [17]. Finally, to test and treat symptomatic patients infected by the COVID-19 is crucial in order to stop viral progression, In the absence of clinical trial, and as the contraindications of hydroxychloroquine are very limited and its undesirable side effects are very rare it could be prescribed for symptomatic pregnant women infected by COVID-19 to avoid their evolution to severe forms and to diminish the viral carriage and the maternal transmission to the fetus and the newborn [18].

### Conclusion

Currently it is necessary to test all pregnant women presenting in our maternities by PCR-SARS-Cov-2 test and or serologies. Symptomatic pregnant women, especially those with severe forms of COVID-19 pneumonia, should be treated by hydroxychloroquine or other antiviral treatments. These patients should be included in clinical trials or treated after multidisciplinary concertation in order to evaluate these treatments scientifically.

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