Cross-sectional study confirms absence of viral RNA in vaginal secretion of SARS-CoV-2–infected women

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OBJECTIVE: The presence or absence of SARS-CoV-2 in vaginal secretion can raise discussions about viral transmission during vaginal delivery, possible consequences in the female reproductive tract, and safety during gynecologic procedures. We evaluated the presence of SARS-CoV-2 in vaginal secretions of symptomatic and asymptomatic patients with SARS-CoV-2 infection admitted to a university hospital in Brazil.

STUDY DESIGN: This cross-sectional study was conducted at the University Hospital of Paulista School of Medicine, Federal University of São Paulo, São Paulo, Brazil. Women with SARS-CoV-2 infection, confirmed by reverse transcriptase-polymerase chain reaction (RT-PCR) in the nasopharyngeal swab, admitted to the hospital because of respiratory symptoms of COVID-19 (n=44) or diagnosed with SARS-CoV-2 infection during the routine test before other hospital procedures (n=6) between May 2020 and July 2020 were enrolled. The study was approved by the Ethics Committee of the Federal University of São Paulo and the National Committee of Ethics in Research (process number 4.059.761; CAEE: 30683320.7.0000.5505), and all individuals provided informed consent. Of note, 2 swabs of vaginal secretion were collected without the placement of a speculum. RNA was purified (PureLink Viral RNA/DNA Mini Kit; Invitrogen, Waltham, MA), and PCR reactions used AgPath-ID One-Step RT-PCR Kit (Applied Biosystems, Waltham, MA), following manufacturer instructions and previously standardized practices. The SARS-CoV-2 targets correspond to the virus nucleocapsid protein (N1 and N2) according to the US Centers for Disease Control and Prevention protocol. Internal control and positive and negative SARS-CoV-2 controls were added. Cycle threshold (Ct)'s of <40 were considered positive.

RESULTS: Women included in the study were 22 to 92 years old (52.8±15.3) and were in the reproductive (40%), menopause (54%), or puerperium (6%) phase, and all women declared to be heterosexual. All women (n=44) with COVID-19 symptoms presented respiratory symptoms at the vaginal swab collection. Of these women, 20 were tested ≤10 days (6.7±2.2) after the onset of symptoms, and 24 were tested >10 days (15.29±2.3) after the onset of symptoms. Of note, 6 women without COVID-19 symptoms had vaginal swab collection 7.3±5.2 days after a positive nasopharyngeal test. Only 1 vaginal secretion sample was positive for SARS-CoV-2. The RT-PCR was repeated twice and confirmed a positive result. The woman was 58 years old, Black, and morbidly obese (body mass index of 51.3 kg/m^2) and presented poor mobility. Vaginal swab collection was performed on the 14th day after the onset of COVID-19 symptoms; however, the woman still presented with respiratory compromise. She had very poor perineal hygiene, indicating possible fecal contamination.

CONCLUSION: Our study included a large sample of women with different COVID-19 clinical conditions compared with previous studies[1,2] and found the presence of SARS-CoV-2 in 1 of 50 samples. However, as SARS-CoV-2 was present in the feces[3] of the patient who was morbidly obese and had poor hygiene, fecal contamination could be a reasonable explanation for this particular result. Nevertheless, the immunologic characteristics of the vaginal mucosa could confirm the absence of SARS-CoV-2 in vaginal secretion.[4] Moreover, vaginal lactobacilli responsible for acid pH and hydrogen peroxide production have antimicrobial and antiviral capabilities,[5] confirming the hypothesis of the natural protective role of vaginal secretions against several viruses. Our study confirms the absence of SARS-CoV-2 in vaginal secretion of women presenting with COVID-19 symptoms and supports the safety of vaginal delivery. Despite the inherent risks of infection through close contact and respiratory pathway, it is understandable that women's health professionals are not exposed to the risk of infection through vaginal secretion during the physical evaluation or gynecologic procedures. ■

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Pedro Ernesto Carvalho de Cillo, MD
Fernanda Marino Lafraia, MD
Disciplina de Uroginecologia
Departamento de Ginecologia
Escola Paulista de Medicina
Universidade Federal de São Paulo
São Paulo, Brazil

Tatiana Carvalho de Souza Bonetti, PhD
Laboratório de Ginecologia Molecular
Departamento de Ginecologia
Escola Paulista de Medicina
Universidade Federal de São Paulo
São Paulo, Brazil
Departamento de Neurologia
Centro de Neurociências e Saúde da Mulher "Professor Geraldo Rodrigues de Lima"
Escola Paulista de Medicina
Universidade Federal de São Paulo
São Paulo, Brazil
tbonetti@unifesp.br

Maira Garcia Saldanha, PhD
Nayra Reis, PhD
Laboratório de Ginecologia Molecular
Departamento de Ginecologia
Escola Paulista de Medicina
Universidade Federal de São Paulo
São Paulo, Brazil

Marair Gracio Ferreira Sartori, MD, PhD
Disciplina de Uroginecologia
Departamento de Ginecologia
Escola Paulista de Medicina
Universidade Federal de São Paulo
São Paulo, Brazil
Laboratório de Ginecologia Molecular
Departamento de Ginecologia
Escola Paulista de Medicina
Universidade Federal de São Paulo
São Paulo, Brazil
Departamento de Neurologia
Centro de Neurociências e Saúde da Mulher "Professor Geraldo Rodrigues de Lima"
Escola Paulista de Medicina
Universidade Federal de São Paulo
São Paulo, Brazil

Maria Gabriela Baumgarten Kuster Uyeda, MD, PhD
Disciplina de Uroginecologia
Departamento de Ginecologia
Escola Paulista de Medicina
Universidade Federal de São Paulo
São Paulo, Brazil

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