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Universal SARS-CoV-2 testing of pregnant women admitted for delivery in two Italian regions.

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Introduction

Since the early days of the COVID-19 pandemic, substantial undocumented infection has been thought to contribute to the dissemination of SARS-CoV2,[1] with estimated percentages of undocumented infections of 72 to 90%.[1-3]

Italy has been the first western country to be massively hit by the pandemic. On March 11th, the Italian government ordered the country lockdown, which is still in place. This led to a flattening and eventually to a reduction of the pandemic curve.

Starting by the end of March, several hospitals have begun universal SARS-CoV-2 screening on all admitted patients. Women admitted for delivery represent a peculiar population and a unique source of information, as they come to hospital independently of illness and of their decision. They can therefore provide useful estimates of the circulation of the virus in the general population, despite a possible different social behavior, especially near delivery.

The objective of this study was to estimate the “true” SARS-CoV2 infection rate among women admitted for delivery and estimate the burden of undocumented infections in this population.

Methods

We studied 2 neighboring Italian Regions, North of Tuscany and Liguria, both considered at medium risk of infection compared to Northern Regions. All the 6 hospitals of Azienda USL “Toscana Nord Ovest” [ATNO] (Tuscany), and Gaslini Children’s Hospital (Genoa, Liguria) began screening for SARS-CoV2 between March 26th and April 1st by nasopharyngeal swab (real-time reverse-transcriptase polymerase chain reaction).

Informed consent was obtained from women.

Results

Up to April 19th, 533 women were admitted for delivery (ATNO: 344, Gaslini: 189). Of these. 3 from ATNO tested positive (1 had anosmia only, and 2 were asymptomatic): all gave birth without clinical problems for the mother and the neonate.

The estimated prevalence in this sample was $3/533 = 0.56\%$ (95% Confidence interval: 0.19 – 1.64). During the studied period, the overall prevalence of positive cases reported by the Italian COVID-19 Surveillance System in women of 20 to 39 years of age in Tuscany was 0.094%. [4] From these data, we can estimate that 83% (51 to 94) of infections were unreported, i.e. the real prevalence risk of the general population of women of this age is 6 (2-11) times the rate found in women tested for clinical reasons.

Comment

Our estimated risk of undocumented infection in pregnant women, obtained in a population at “steady-state” for virus circulation and during a country lockdown, confirms earlier estimates of about 4-9 undetected cases to 1 case detected because of symptoms.

Interestingly, these ratios are confirmed even in completely different settings like hospitals in New York, [4,5] where both the prevalence of infection at delivery among asymptomatic women who would not be otherwise tested (13.5% [5] and 13% [6]) and baseline risk in the population (1.4%) are more than one order of magnitude greater than in Tuscany.

The small number of positive cases in our sample does not allow a precise estimate, but the substantial stability of the ratio of undocumented to documented infections in different populations and using different methodologies, [1-3,5-6] suggests that these results are generalizable.

We concur that a strategy of universal testing of all pregnant women admitted for delivery is warranted to control further spread of the virus,[6] and, above all, to protect the women themselves, their newborns, and the healthcare staff against the infection.

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