JAMA Pediatrics | Original Investigation

Evaluation of Rooming-in Practice for Neonates Born to Mothers With Severe Acute Respiratory Syndrome Coronavirus 2 Infection in Italy

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IMPORTANCE The management of mother-infant dyads during the ongoing severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic constitutes a major issue for neonatologists. In mothers with SARS-CoV-2 infection, current recommendations suggest either to separate the dyad or encourage protected rooming-in under appropriate precautions. No data are available regarding the risk of mother-to-infant transmission of SARS-CoV-2 during rooming-in.

OBJECTIVE To evaluate the risk of postnatal transmission of SARS-CoV-2 from infected mothers to their neonates following rooming-in and breastfeeding.

DESIGN, SETTING, AND PARTICIPANTS A prospective, multicenter study enrolling mother-infant dyads from March 19 to May 2, 2020, followed up for 20 days of life (range, 18-22 days), was performed. The study was conducted at 6 coronavirus disease 2019 maternity centers in Lombardy, Northern Italy. Participants included 62 neonates born to 61 mothers with SARS-CoV-2 infection who were eligible for rooming-in practice based on the clinical condition of the mother and infants whose results of nasopharyngeal swabs were negative at birth.

EXPOSURES Mothers with SARS-CoV-2 infection were encouraged to practice rooming-in and breastfeeding under a standardized protocol to minimize the risk of viral transmission.

MAIN OUTCOMES AND MEASURES Clinical characteristics and real-time reverse transcriptase-polymerase chain reaction for SARS-CoV-2 on neonatal nasopharyngeal swabs at 0, 7, and 20 days of life.

RESULTS Of the 62 neonates enrolled (25 boys), born to 61 mothers (median age, 32 years; interquartile range, 28-36 years), only 1 infant (1.6%; 95% CI, 0%-8.7%) was diagnosed as having SARS-CoV-2 infection at postbirth checks. In that case, rooming-in was interrupted on day 5 of life because of severe worsening of the mother's clinical condition. The neonate became positive for the virus on day 7 of life and developed transient mild dyspnea. Ninety-five percent of the neonates enrolled were breastfed.

CONCLUSIONS AND RELEVANCE The findings of this cohort study provide evidence-based information on the management of mother-infant dyads in case of SARS-CoV-2 maternal infection suggesting that rooming-in and breastfeeding can be practiced in women who are able to care for their infants.

Editorial

Supplemental content

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JAMA Pediatr. doi:10.1001/jamapediatrics.2020.5086
Published online December 7, 2020.

The novel β-coronavirus named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has rapidly spread across the globe since the end of December 2019 and was identified as the causative agent of coronavirus disease 2019 (COVID-19).[1] COVID-19 represents the third large-scale outbreak event caused by a coronavirus in less than 20 years, after the severe acute respiratory syndrome coronavirus epidemic in 2003 and the Middle East respiratory syndrome coronavirus epidemic in 2012.[2] On March 11, 2020, COVID-19 was officially declared a pandemic. Italy was one of the first countries involved in the pandemic after China, and the Lombardy region of Italy has been the most affected territory, with 95 173 cases and 16 760 deaths as of July 14, 2020.

A major issue for obstetricians and neonatologists during the SARS-CoV-2 pandemic has been the management of mother-infant pairs because, at the time of writing, neither preperinatal nor postnatal transmission from mother to child had been completely ruled out.[3-11] In the postnatal period, respiratory secretions and saliva constitute a major concern for the possible transmission of the virus from infected mothers to their infants, inasmuch as they represent the primary vehicles for human-to-human transmission of SARS-CoV-2.[1] However, currently available data do not resolve that issue.[3,11-16]

Based on this scarce evidence, scientific organizations and experts have drawn up recommendations and consensus statements on the management of mother-infant pairs in the postpartum period, with the statements partly different from each other. Some have pointed out the importance of rooming-in, even in the case of a mother who has confirmed SARS-CoV-2 infection, as long as appropriate droplet and contact precautions are taken.[17-21] Others, conversely, have not encouraged this practice.[22-24] As for breastfeeding, most scientific organizations encourage it, and some of them highlight a putative higher safety of expressed breast milk until the mother is infectious.[20,22,23] Previous evidence with other respiratory viruses, such as influenza virus, has suggested that rooming-in and breastfeeding are safe and not associated with mother-to-infant transmission, if appropriate precautions were taken.[25]

The purpose of this prospective, cohort multicenter study was to evaluate the safety of the rooming-in practice during the SARS-CoV-2 pandemic, that is, the risk of postnatal transmission of SARS-CoV-2 from infected mothers to their neonates following this practice, which is considered today the best to favor the establishment of the mother-child relationship.

Key Points

Question Are rooming-in and breastfeeding safe for neonates born to mothers infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)?

Findings In this multicenter cohort study, 62 neonates born to 61 mothers with SARS-CoV-2 infection were roomed-in with appropriate precautions; no neonate tested positive for SARS-CoV-2 on nasopharyngeal swab at birth, and 95% of them were breastfed. All neonates were followed up until age 3 weeks; only 1 neonate was diagnosed as having SARS-CoV-2 infection during follow-up.

Meaning The findings of this study suggest that mother-to-infant transmission of SARS-CoV-2 during rooming-in practice is rare, provided that adequate droplet and contact precautions are taken.

Methods

Study Population

This was a prospective, multicenter study conducted at 6 COVID-19 maternity centers, located in Lombardy, Northern Italy, between March 19 and May 2, 2020. The study protocol was approved by the Ethics Committee of the promoter center (Comitato Etico Milano Area B-Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico Milano) and those of the participating centers. Written informed consent was obtained from the neonates' parents for inclusion in the study, and all procedures were in accordance with the Declaration of Helsinki.[26] This study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline for cohort studies.[27]

All inborn neonates, both term and late preterm, born to mothers infected with SARS-CoV-2 and eligible for the rooming-in practice based on clinical conditions of both the mother and child, were consecutively enrolled in the study. Exclusion criteria were a neonatal nasopharyngeal swab positive for SARS-CoV-2 by means of polymerase chain reaction (PCR) testing on day 1 of life or lack of parental consent. None of the patients or data described herein have been reported previously in any publication.

Term neonates were defined as those born at a gestational age (GA) between 37 and 42 weeks; late preterm neonates were defined as those born at a GA between 34 and 37 weeks. Mothers were defined as infected with SARS-CoV-2 when they tested positive for the virus by PCR on a nasopharyngeal swab performed between 14 days before delivery and the first days after childbirth before hospital discharge. Mothers undergoing a diagnostic assessment at the time of delivery were termed as persons under investigation pending the result, according to the Centers for Disease Control and Prevention definition.[28] Mothers were considered eligible for the rooming-in practice under the following conditions: no need for respiratory support or supplemental oxygen, temperature less than 38 °C, vital signs within the reference ranges, and ability to take care of the baby. Neonates were considered eligible for rooming-in when they were well-appearing, with a GA greater than or equal to 34 weeks and a birth weight greater than or equal to 2000 g, a physical examination within normal limits, vital signs within the reference ranges, and skilled in feeding.

Study Design

Until March 31, only women with symptoms suggestive for SARS-CoV-2 infection in the 2 weeks before delivery or with referred close contact with a probable or confirmed case of COVID-19 within the same time frame were investigated. As of April 1, all women in labor were tested for SARS-CoV-2 based on a regional ordinance. In the delivery room, women and neonates were assisted by a multidisciplinary team donning personal protective equipment: gown, double gloves, N95

respiratory mask with eye protection, and either face shield or goggles.

When mother-infant pairs were eligible for rooming-in, mothers were encouraged to practice protected rooming-in, defined as rooming-in preceded by an educational program, and breastfeeding. Mothers and infants were admitted to dedicated COVID-19 areas. Based on the Italian Society of Neonatology ad interim indications,[17] a formal document regarding protected rooming-in rules was provided to the mothers, especially concerning handwashing, surgical face mask donned during breastfeeding or when providing care for the infant, and otherwise physical distancing (2 m) from the infant (eAppendix 1 in the Supplement). Mothers did not wear gloves, gowns, or goggles. They could express breast milk. For infants fed with expressed milk or formula milk, strict adherence to sterilization guidelines policies was recommended. Visits to the mother and infant, including paternal visits, were not permitted for the duration of their hospital stay.

Neonates were tested for SARS-CoV-2 by PCR on a nasopharyngeal swab collected within 24 hours after birth. They underwent a physical examination daily and mother-infant pairs received nurse and midwife care many times a day. Neonates who required temporary separation from mothers, either for maternal or neonatal reasons, were placed in dedicated rooms in the neonatal intensive care unit (NICU).

On day 7 of life, neonates underwent a second nasopharyngeal swab and were discharged from the hospital if they were in good clinical condition. Before discharge, mothers received written guidance to manage care for the child at home properly (eAppendix 2 in the Supplement). All neonates enrolled in the study received a check-up visit by a neonatologist at 20 days of life (12-16 days after discharge) in an outpatient follow-up clinic dedicated to SARS-CoV-2–positive patients and contacts. At the same time, a nasopharyngeal swab for SARS-CoV-2 PCR was performed in the infants.

Sample Preparation and Analysis

Respiratory samples from the upper respiratory tract were collected from neonates by means of a sterile, flexible flocked nylon swab (FLOQSwabs; Copan Italia S.p.A.) subsequently placed in 3 mL of universal transport medium (UTM viral transport; Copan Italia S.p.A.). Total nucleic acids (DNA/RNA) were extracted from 200 µL of universal transport medium using the QIAsymphony instrument with QIAsymphony DSP Virus/Pathogen Midi Kit (Complex 400 protocol) according to the manufacturer's instructions (Qiagen). Specific real-time reverse transcriptase-PCR targeting RNA-dependent RNA polymerase and E genes were used to detect the presence of SARS-CoV-2 according to the World Health Organization guidelines[29] and Corman et al[30] protocol.

Data Collection and Statistical Analysis

Data from mothers and neonates were prospectively collected using an electronic database. The following maternal variables were recorded: age at delivery, ethnicity, number of previous hospitalizations during pregnancy, morbidities during pregnancy aside from SARS-CoV-2 infection, twin pregnancy, mode of delivery, premature rupture of the membranes greater than or equal to 18 hours before birth, foul-smelling amniotic fluid, time of SARS-CoV-2 infection diagnosis, epidemiologic history of SARS-CoV-2 within 14 days of diagnosis, symptoms suggestive of SARS-CoV-2 infection, and death in the first 3 weeks of the postpartum period. The following symptoms were considered suggestive for maternal SARS-CoV-2 infection: malaise, fever, sore throat, rhinitis, conjunctival congestion, cough, dyspnea, chest pain, hemoptysis, headache, myalgia, diarrhea, nausea/vomiting, and anosmia/ageusia. Those symptoms were recorded at the time the infection was diagnosed and at the time of delivery, as well as daily throughout the length of the hospital stay.

Moreover, we recorded the following neonatal data: sex, GA, birth weight, twins, Apgar score at 1 and 5 minutes of life, need for resuscitation at birth (at least ventilation with mask), SARS-CoV-2 PCR results on nasopharyngeal swab according to the timing of the study, any symptoms that developed during hospitalization or at home until the last visit, type of feeding, length of stay, and death. A possible temporary separation of the neonate from the mother during hospital stay, either for maternal or neonatal reasons, was also recorded.

Data analysis was performed using SAS, version 9.4 (SAS Institute Inc). The categorical variables were summarized as frequencies (percentage), the continuous variables as mean (SD) or median (interquartile range) in accordance with their distribution. The birth weight, length, and head circumference were expressed in *z* scores, using growth charts for nonfirstborn infants as reference.[31]

Results

During the study period, a total of 62 neonates (1 pair of twins, 25 boys) born to 61 mothers (median age, 32 years, interquartile range, 28-36 years) infected with SARS-CoV-2 and eligible for rooming-in were enrolled at the participating centers. None of the infants was excluded because of a positive nasopharyngeal swab for SARS-CoV-2 on day 1 of life.

Demographic and clinical characteristics of the mothers are provided in **Table 1**. Forty-six of the 61 women (75%) vaginally delivered. SARS-CoV-2 infection was diagnosed in 44 women (72%) before delivery, 14 women (23%) were persons under investigation at delivery, and 3 women (5%), including the woman with twins, were diagnosed between 2 and 5 days post partum because of the onset of symptoms suggestive for maternal SARS-CoV-2 infection. Overall, the median time from delivery and diagnosis was −1 day (interquartile range, −3 to 0 days). Among SARS-CoV-2–positive women, 34 women (55%) were asymptomatic at diagnosis, and 43 women (70%) were asymptomatic at the time of delivery. The most frequent maternal symptoms are reported in **Table 2**. On day 5 post partum, while rooming-in and breastfeeding were ongoing, one mother had a serious worsening of her clinical condition from initial symptoms of isolated, mild cough to bilateral pneumonia and pulmonary embolism requiring intensive care unit admission and mechanical ventilation for 14 days. Rooming-in was interrupted and the neonate was isolated in the NICU. None of the mothers died during the study period.

Table 1. Characteristics of the Mothers With SARS-CoV-2 Infection

Characteristic	No. (%)
No. of mothers	61
Age, median (IQR), y	32 (28-36)
Ethnicity	
White	47 (77)
Hispanic	7 (11)
Black	5 (8)
Asian	2 (3)
Previous hospitalizations during pregnancy	6 (10)
Morbidities during pregnancy (other than SARS-CoV-2 infection)	
Placental disorders	2 (3)
Gestational diabetes	2 (3)
Autoimmune diseases	3 (5)
Twin pregnancy	1 (2)
Mode of delivery	
Vaginal	46 (75)
Cesarean	15 (25)
Rupture of the membranes ≥18 h	8 (13)
Foul-smelling amniotic fluid	1 (2)
Epidemiologic history for SARS-CoV-2 (within 14 d of diagnosis)	
Close contact with a person with SARS-CoV-2 infection	12 (20)
Recently traveled or stayed in a COVID-19 zone	4 (6)
Unknown	45 (73)
SARS-CoV-2 infection diagnosed before delivery (within 14 d)	44 (72)
Person under investigation at delivery	14 (23)
SARS-CoV-2 infection diagnosed after delivery (within 5 d)	3 (5)
Time from delivery and diagnosis, median (IQR), d	−1 (−3 to 0)
No. of symptoms at diagnosis	
0	34 (55)
1	12 (20)
2	11 (18)
3	3 (5)
4	1 (2)
No. of symptoms at delivery	
0	43 (70)
1	12 (20)
2	5 (8)
3	0
4	1 (2)
Worsening of SARS-CoV-2 infection-related symptoms during hospital stay	1 (2)
Death within 3 wk post partum	0

Abbreviations: COVID-19, coronavirus disease 2019; IQR, interquartile range; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2.

Of the 62 neonates enrolled in the study, 56 infants (90%) were born at term and 6 infants (10%) were late preterm. Characteristics of the neonates are summarized in **Table 3**. Median GA was 39 weeks (range, 35-41 weeks), mean (SD) birth weight was 3197 (404) g, 25 infants (40%) were male, and 37 infants (60%) were female. The Apgar score at 5 minutes was 10 (range, 8-10) and only 1 neonate needed resuscitation at birth (ventilation with mask) in the delivery room. Most infants (59 of 62 [95%]) received breast milk. Of these, 45 infants (76%) were exclusively breastfed, 1 infant (2%) was breastfed and simultaneously received expressed breast milk, and 13 infants (22%) were breastfed and received formula milk.

Among 62 neonates, only 1 infant (1.6%; 95% CI, 0%-8.7%) was diagnosed as having SARS-CoV-2 infection before discharge. She was the daughter of the woman requiring intensive care, born at 36 weeks' GA with a birth weight of 2500 g. On day 5 of life, the infant was admitted to the NICU after rooming-in was stopped. Her nasopharyngeal swab test was positive on day 7 of life, and she developed mild dyspnea, which resolved spontaneously within a few days. The infant was discharged at home with her father on day 18 of life, still positive for SARS-CoV-2. The nasopharyngeal swab test was negative at the 30th day follow-up visit. Of the remaining 61 neonates, none tested positive for SARS-CoV-2 on nasopha-

Table 2. Severe Acute Respiratory Syndrome Coronavirus 2–Infected Mothers' Symptoms

	No. (%)	
Symptom	At diagnosis	At the time of delivery
Malaise	4 (6)	1 (2)
Fever	8 (13)	2 (3)
Sore throat	2 (3)	2 (3)
Rhinitis	6 (10)	4 (6)
Cough	11 (18)	7 (11)
Dyspnea	4 (6)	4 (6)
Myalgia	3 (5)	1 (2)
Diarrhea	1 (2)	1 (2)
Nausea/vomiting	1 (2)	0
Anosmia/ageusia	7 (11)	4 (6)

Table 3. Characteristics of the Neonates Born to SARS-CoV-2–Infected Mothers

Characteristic	No. (%)
No. of neonates	62
Boys	25 (40)
Gestational age, median (range), wk	39 (35-41)
Preterm birth	6 (10)
Birth weight, mean (SD), g	3197 (404)
Birth weight, mean (SD), *z* score[a]	−0.13 (0.86)
Small for gestational age[a]	6 (10)
Large for gestational age[a]	5 (8)
Apgar score, median (range), points	
At 1 min	9 (4-10)
At 5 min	10 (8-10)
Resuscitation at birth[b]	1 (2)
SARS-CoV-2 positivity	
At birth	0
At 7 (5-9) d of life	1 (2)
At 20 (18-22) d of life	1 (2)
SARS-CoV-2–related symptoms	
During hospital stay	1 (2)
During follow-up	0
Type of feeding	
Exclusive breastfeeding	45 (73)
Breastfeeding and expressed breast milk	1 (2)
Breastfeeding and formula milk	13 (21)
Exclusive formula milk	3 (5)
Length of stay, median (IQR), d	5 (4-6)
Death within 3 wk after birth	0

Abbreviations: IQR, interquartile range; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2.

[a] Determined using growth charts for not firstborn.[31]

[b] At least ventilation with mask.

ryngeal swab before discharge or at the follow-up visit (Table 3). All of the infants remained in good clinical condition during the study period.

As reported in **Table 4**, protected rooming-in was exclusive in 51 enrolled neonates (82%). A short (except for the neonate described in the previous paragraph), temporary separation from the mother with isolation in NICU was needed in 7 neonates (11%): for maternal reasons in 1 case (mother admitted to the intensive care unit) and for neonatal reasons in 6 cases (mild fetal distress, feeding difficulty, and hyperbilirubinemia). Only 4 neonates (6%) had initially unprotected rooming-in, as the mothers underwent nasopharyngeal swab after childbirth.

Discussion

In this prospective, multicenter study, we evaluated the safety of rooming-in practice in a cohort of neonates born to SARS-CoV-2–infected mothers. Based on our results, the risk of mother-to-infant transmission of SARS-CoV-2 during rooming-in seems to be unlikely, provided that infected mothers are

Table 4. Rooming-in Practice of 62 Mother-Infant Pairs

Type of rooming-in	No. (%)
Protected rooming-in exclusively[a]	51 (82)
Initially unprotected rooming-in[b]	4 (7)
Day of life starting at protected rooming-in, median (range)	4 (2-5)
Initially temporary separation (<24 h) from the mother	
Mild fetal distress	3(5)
Feeding difficulty	2 (3)
Protected rooming-in from birth, then separation	
NICU admission for maternal reasons	1 (2)
NICU admission for neonatal reasons	1 (2)

Abbreviation: NICU, neonatal intensive care unit.

[a] Handwashing before caring for the baby, surgical mask, baby's bed 2 m away from the mother.

[b] Mother examined for severe acute respiratory syndrome coronavirus 2 after delivery.

not severely affected by COVID-19 and are educated to observe droplet and contact precautions when taking care of or breastfeeding their infants.

To promote and support breastfeeding, the World Health Organization and the United Nations International Children's Emergency Fund developed the Baby-Friendly Hospital Initiative, in which they stated that rooming-in facilitates the establishment of breastfeeding and improves the health of mother and child.[17,32] Baby-friendly hospital initiative guidelines are currently being implemented worldwide, but, in the context of the ongoing COVID-19 pandemic, the optimal management of mother-infant pairs is yet to be determined.

To date, most authors have focused their attention on preperinatal transmission of SARS-CoV-2.[5,14,15,33] Theoretically, SARS-CoV-2 may be transmitted to the fetus in utero through the placenta or during delivery through vaginal secretions. At least 6 neonates have been reported as having positive SARS-CoV-2 test results in the first 3 days of life, but a definitive diagnosis of vertical transmission was hindered primarily by the lag between birth and testing time or a negative result on retesting soon after birth.

To our knowledge, the postnatal mother-to-infant transmission of SARS-CoV-2 has not been investigated yet, and no evidence supports the hypothesis that rooming-in and breastfeeding are risk factors for postnatal transmission of SARS-CoV-2 from infected women to their infants through droplets and direct contact. As precautionary measures, some scientific organizations have not encouraged rooming-in and breastfeeding in SARS-CoV-2–infected mothers, based on the assumption that mother-neonate separation and avoiding breastfeeding would minimize the risk of postnatal infant infection from maternal respiratory secretions.[22-24] Nonetheless, this approach interferes with the mother-child relationship, as well as with the promotion of breastfeeding.[32] Conversely, but also without evidence-based data, many other scientific organizations have encouraged rooming-in and breastfeeding even if mothers are infected with SARS-CoV-2, provided appropriate precautions to prevent its transmission through respiratory secretions are used.[17-20]

Given the lack of evidence about that issue, we planned this prospective, multicenter study investigating neonates born to SARS-CoV-2–infected mothers who were suitable for rooming-in. All participating mothers were asymptomatic or had mild symptoms at delivery, and their clinical conditions did not contraindicate rooming-in or breastfeeding. Furthermore, most of the mothers did not develop symptoms during rooming-in or symptoms already present at delivery did not worsen. This finding is in agreement with previous larger cohorts of SARS-CoV-2–infected pregnant women,[34] and does not suggest a high probability of severe maternal COVID-19 in the peripartum or postpartum period.

To investigate the risk of mother-to-infant SARS-CoV-2 transmission during rooming-in and breastfeeding, we followed up the neonates until 3 weeks of life, testing them with nasopharyngeal swabs at birth, before discharge, and 2 weeks later. The current estimate of the mean incubation period for SARS-CoV-2 is 6.4 days, ranging from 2.1 to 11.1 days, supporting the current Centers for Disease Control and Prevention guidance that recommends 14 days of quarantine after the onset of symptoms or close contact with a SARS-CoV-2–infected person.[35,36] In light of these dynamics, we decided to obtain a nasopharyngeal swab at 20 days of life (14 days after discharge) to rule out a SARS-CoV-2 infection that may not have been identified before hospital discharge. Because none of the nasopharyngeal swab results were positive for SARS-CoV-2 at 20 days after birth and no symptoms suggestive of SARS-CoV-2 infection appeared, we ascertained that rooming-in and breastfeeding using droplet and contact precautions in our cohort were safe practices for neonates born to mothers with SARS-CoV-2 infection. In particular, we believe that education of mothers about droplet and contact precautions and hand hygiene practices, as well as a constantly rigorous application of recommendations, were fundamental to minimize the risk of mother-to-infant transmission of the virus. Because 73% of the neonates were exclusively breastfed, we also hypothesize that breast milk may have played a protective role, either through transmission of specific IgA or indirectly through its immunologic properties, as demonstrated for other respiratory viral infections.[37]

However, we recorded a single episode of SARS-CoV-2 mother-to-infant transmission during rooming-in and breastfeeding. In this case, the maternal health status mutated in a few hours on day 5 after delivery from a mild disease (the mother initially reported isolated, mild cough) to a condition of severe respiratory distress, ultimately requiring ICU admission and mechanical ventilation. In adults affected by SARS-CoV-2 infection, both the severity of symptoms at presentation and the probability of disease progression correlate with viral load in the lower respiratory tract.[38,39] No comparable, robust data are currently available for pediatric patients.[40] We could not measure viral load in our population of infected women and neonates, but it is conceivable that this unique case of mother-to-infant transmission was favored by a high maternal viral load in respiratory secretions that overcame the protection provided by the use of personal protective equipment and rigorous hygiene procedures. The neonate affected by postnatal transmission of SARS-CoV-2 was admitted to the NICU

with mild dyspnea that resolved spontaneously in a few days, which is consistent with other reports of mild to moderate disease in the immediate postnatal period, especially in the absence of prematurity or other comorbidities.[3,11,14]

Strengths and Limitations

The main strength of our study is the number of neonates born to SARS-CoV-2–infected mothers enrolled, which, to our knowledge, represents the largest cohort reported to date. Furthermore, the prospective, multicenter study design and the application of rigorous methods contributed to the robustness of results.

Our study presents some limitations. The sample size was relatively small, and a proper control group was lacking, limiting the generalizability of our findings. We were not able to quantify the viral load in any specimen or the magnitude of maternal or neonatal antibody response. Thus, we could not perform a more detailed correlation analysis. Moreover, the direct contribution of breast milk as a possible vehicle for virus, but also for protective antibodies transmission, was not assessed.

Conclusions

In this cohort study of neonates born to mothers with SARS-CoV-2 infection in 6 maternity centers in Lombardy, Italy, mother-to-infant transmission of SARS-CoV-2 during protected rooming-in practice was rare, and no case was recorded when mothers remained asymptomatic or experienced mild disease. We believe that SARS-CoV-2–infected mothers in good clinical condition and willing to take care of their babies should be encouraged to practice rooming-in and breastfeeding after being carefully instructed about the appropriate droplet and contact precautions. This report provides new, evidence-based data on the management of mother-infant pairs in SARS-CoV-2 maternal infection.

ARTICLE INFORMATION

Accepted for Publication: July 15, 2020.

Published Online: December 7, 2020. doi:10.1001/jamapediatrics.2020.5086

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Conflict of Interest Disclosures: None reported.

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