Sudden Onset Oligohydramnios in Asymptomatic Covid-19 Disease: Case Reports

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Research Article

Keywords: COVID-19, Oligohydramnios, Pregnancy

Posted Date: August 20th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-772124/v1>

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Abstract

The ongoing pandemic of COVID-19 disease has adverse effects on both pregnant women and their fetuses. However the literature about the effects of this disease on placenta and its clinical implication is limited. Here we report two cases of severe oligohydramnios detected in asymptomatic patients with covid infection. In both of our patients, severe oligohydramnios was detected during routine antenatal check up in third trimester of pregnancy. Both the patients underwent cesarean delivery and delivered healthy neonates. The onset of oligohydramnios was noticed to be very fast and not associated with severity of symptoms of Covid-19 infection. It is recommended for increase in number of ultrasound examination in pregnant women positive for covid-19 infection in view of our findings.

Introduction:

The pandemic caused by the severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2) has been growing at an alarming rate affecting millions across the globe. It is well known that pregnant women and their foetuses are more vulnerable to the adverse effect of the viral infection.[1] There is limited data available regarding impact of covid-19 disease on outcome of pregnancy and its effects on foetus. Although the pathophysiology of covid-19 disease is not clearly established, it is believed to cause hypercoagulable state with widespread microthrombi formation.[2] Evidence is emerging in favour of venous thromboembolism and microangiopathic disease involving most of the organ systems. However the studies about the effects of covid-19 disease on placenta and its clinical implication are not well established. Here we report two cases of severe oligohydramnios detected in asymptomatic patients with covid infection at a peripheral hospital in Northern India.

Case Reports:

Case 1

A 21 year old gravida 2, para 1 lady was a booked case and was under regular antenatal care. Her pregnancy was without any complications and all the maternal & fetal parameters were normal. During routine antenatal visit at 36 weeks 5 days period of gestation she was found to have reduced liquor on clinical examination. There was no history suggestive of premature rupture of membranes (PROM). Per speculum examination did not show any evidence of PROM and per vaginal examination revealed intact fetal membrane. Ultrasound examination was performed which showed normal biometric parameters as expected for a 36 weeks pregnancy. The amniotic fluid measurements showed single deepest pocket of 0.2cm which suggested severe oligohydramnios (Fig. 1). No significant changes could be seen on morphology of placenta. The NST graph showed reduced fetal heart rate variability. Her previous sonographic examination was done at 34 weeks 4 days period of gestation which showed normal biometric parameters and amniotic fluid index of 12cm. Mother was then tested for covid-19 infection as a routine protocol of the hospital in view of her admission as indoor patient. She tested positive for covid-19 infection. The pregnancy was terminated by cesarean section in view of severe oligohydramnios with

non reassuring NST resulting in a preterm baby weighing 2.67Kg. The covid-19 test result was negative for the newborn. The histopathological examination of placenta showed no significant abnormality.

Case 2

A 26 year old primigravida lady was a booked case and was under regular antenatal care. Her pregnancy was uncomplicated with normal fetal and maternal parameters. Her ultrasound examination at 36 weeks 4 days of period of gestation showed normal biometric parameters with normal amniotic fluid levels. However the doppler study showed abnormal systolic/diastolic ratio of flow velocities in umbilical artery (3.14). She was reviewed after 4 days (37 weeks 1 day) for repeat doppler study. The ultrasound examination revealed severe oligohydramnios with single deepest pocket of 1.1cm (AFI-3.1cm) (Fig. 2). On further evaluation, she had no history of leaking per vaginum and per vaginal examination revealed intact amniotic membrane. Mother was then tested for covid-19 infection as per protocol of the hospital and found to be positive for Covid-19 infection. She underwent a cesarean delivery and delivered a healthy baby weighing 2.54Kg. The histopathological examination of placenta was unremarkable. The covid-19 test report of the newborn done after 48 hours of delivery was also positive.

Discussion:

Oligohydramnios refers to abnormally decreased amount of amniotic fluid; which is defined conventionally as amniotic fluid index less than 5 cm or single deepest pocket less than 2 cm. This is associated with poor perinatal outcome and can cause intrauterine fetal death.[1] There are increased rates of stillbirth, fetal growth restriction, abnormal fetal heart rate pattern, meconium aspiration syndrome. There is also increased risk of cesarean delivery for fetal distress.

A study conducted by Elizabeth T Patberg at NYU Winthrop hospital concluded that covid-19 infection leads to increased placental histopathologic abnormalities especially vascular malperfusion. The findings of the study were consistent in covid-19 positive patients irrespective of their symptoms.[3] A similar study conducted by Prabhu et al also found higher rates of fetal vascular malperfusion in patients with covid-19 infection.[4] Although histopathology of placentas in both the cases did not reveal any abnormality, vascular malperfusion as the reason behind the occurrence of oligohydramnios should be kept in mind. A significant observation is that the onset of oligohydramnios has been very fast in both of the cases even though they did not have any symptoms of covid-19 infection. The exact pathophysiology of decreased production of liquor should be a focus of future research. Long-term studies involving the neonates of Covid-19 positive patients are also warranted in view of the above findings. Our findings from the case reports do not agree with the conclusion of some studies which have refuted any significant correlation of abnormal ultrasound and doppler findings with covid-19 infection.

Conclusion:

We found that sudden onset severe oligohydramnios is associated with covid-19 infection irrespective of symptomatology of patients. Larger multicenter studies are required to establish the effect of covid-19 infection on liquor volume in pregnancy. In view of our findings, we recommend that pregnant women positive for covid-19 infection should be followed up more often with ultrasound examination for signs of oligohydramnios. We also recommend for testing of newborns born to covid-19 positive mother for SARS Cov-2 virus and their close follow up.

Declarations:

Funding : Nil

Conflicts of interest: Nil

Ethics approval : Study approved by institutional ethics committee

Consent to participate: Written informed consent was obtained from each participant

Consent for publication: Written informed consent was obtained from each participant

Availability of data and material: Not applicable

Code availability : Not applicable

Authors' contributions: All the authors have contributed substantially to data acquisition and preparation of manuscript

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Figures

Figure 1

Severe Oligohydramnios (Single Deepest Pocket – 0.2cm)

Figure 2

Normal biometric parameters with oligohydramnios

Supplementary Files

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