



Leptospirosis in COVID-19 Positive Pregnancy: A Rare Case Report Mimicking HELLP Syndrome

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i43B32567

Editor(s):

- (1) Dr. Jongwha Chang, University of Texas, College of Pharmacy, USA.
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- Complete Peer review History: <https://www.sdiarticle4.com/review-history/73580>

Case Study

Received 25 August 2021
Accepted 09 September 2021
Published 14 September 2021

ABSTRACT

Leptospirosis in pregnancy is often underdiagnosed and not commonly reported due to its unusual appearance and rarity. It looks like HELLP syndrome, obstetric cholestasis, viral hepatitis & pregnancy-related acute fatty liver. Miscarriages in the first trimester, stillbirths, and neonatal leptospirosis are serious complications that necessitate a high degree of concern, heightened sensitivity, and prompt diagnosis and treatment. We have one such incidence of leptospirosis in a COVID-19 positive pregnant female. A 21-year-old Primigravida with a predisposition of serious anaemia & thrombocytopenia, presented with fever, haematemesis, malena and sore throat at 38 weeks and 2 days gestation, during the COVID-19 pandemic. She had pallor, oedema, and haematuria on catheterization, rest all investigations were within normal limits. Proteinuria, haemolysis, low platelets, and elevated bilirubin were discovered during the investigation. Due to the lack of hypertension and elevated transaminases, the working diagnosis was atypical

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haemolysis, low platelets (HELLP) syndrome. The patient was tested for COVID-19 RT-PCR, came out to be positive and the fever spikes continued, leading to further investigations for Dengue, Malaria, Scrub Typhus, and Leptospirosis due to the ongoing Covid-19 pandemic. After the EIA (Enzyme Immunoassay) IgM antibody (confirmatory for Leptospirosis) tested positive for Leptospirosis, the decision to start Doxycycline was made. Meanwhile, the patient's CTG (Cardio tocograph) revealed signs of foetal distress, and a decision for an emergency LSCS was taken (Lower Segment Caesarean Section). The histology of the placenta after the section revealed normal findings. Doxycycline was initiated with a neonatal feeding regimen that was acceptable. On day two of life, the newborn had no indications of inherited leptospirosis and was removed from Neonatal Intensive Care. Within one week, the patient's symptoms had disappeared, and her biochemistry had went back to normal within 2 weeks.

Keywords: Leptospirosis; pregnancy; HELLP: Haemolysis and Elevated Liver Enzymes and Low Platelets; COVID-19: Novel coronavirus disease 2019.

1. INTRODUCTION

Leptospirosis is a tropical endemic infection that is also one of the world's most common zoonotic infections [1]. Leptospirosis in pregnancy is frequently underdiagnosed and underreported due to its unique appearance and prevalence. It looks like HELLP syndrome, viral hepatitis, obstetric cholestasis, and pregnancy-related acute fatty liver. Early abortions, infant deaths, and infantile leptospirosis are all serious consequences, and it requires a high level of suspicion, as well as enhanced awareness, early detection, and management [2]. A case of leptospirosis was described in a 21-year-old woman who was 38 weeks and 2 days pregnant. What makes this case of even more paramount significance, is its incidence during the COVID-19 pandemic which lead to numerous differentials from the highly competent Obstetricians and Physicians invested round the clock in this case. She initially presented with fever, sore throat, haematemesis, haematuria and recent travel history from Yavatmal, Maharashtra which was a containment zone during the Pandemic. Due to a haemolysis image with proteinuria, the first workup suggested a diagnosis of atypical haemolysis, low platelets (HELLP) syndrome (normal liver tests), however subsequent leptospirosis IgM was positive. She was given Azithromycin by mouth (as we were apprehensive to use Doxycycline at the pregnant time) and delivered through Caesarean section at 38 weeks and 4 days. We reviewed the literature and addressed the probable differentials that can present similarly to leptospirosis in terms of appearance. Because it is an uncommon infectious condition, the researchers assume it might be of great instructional value to obstetricians.

2. CASE REPORT

At 38 weeks and 2 days of gestation, a 21-year-old Primigravida with no known co-morbidities arrived to the casualty of a remote tertiary care center with a referral from a peripheral hospital with a history of haematemesis after meals, malena, and sore throat. This was linked to a reduction in urine output. The aforementioned Centre had already diagnosed her with acute anaemia and thrombocytopenia. One month prior to presenting with the complaints, her haemoglobin (Hb) was 9.6 gm/dl and her platelet count was 2,10,000/cumm. After that, it fell to 6.4gm/dl and 54,000/cumm. She was given two units of PRC, after which her Hb was 6.6gm/dl and her PLT was 1,00,000/cumm. She had no prior medical or surgical history, no family medical history of liver illness, and no drugs or traditional supplements. Prior to admission, she had travelled from Yavatmal, Maharashtra, which is a containment district due to the Covid-19 pandemic. There was no confusion or lethargy found during the assessment. The patient did not appear to be toxic. During her stay at our center, she became febrile and had high-grade febrile episodes (temperature ranging 99-102 degree Fahrenheit). She was immediately sent to our center's Isolation unit's presumptive ward for a Corona virus RT-PCR test. Her blood pressure was normal when she was admitted. She was pale and had bilateral pitting type of pedal oedema. Hepatosplenomegaly and right hypochondriac pain were not seen. The cervical os was closed, according to a speculum examination. Hb was 7 gm/dL, platelets were 45,000/cumm, and total white blood cells (TLC) were 6500/cumm with an abnormal APTT/PT. Aspartate transaminase (AST) is 26 U/L, alanine transaminase is 14 U/L, and gamma-glutamyl transferase is 238 U/L, with a total bilirubin of

1.8 mg/dl and direct bilirubin of 1.2 mg/dl, and a creatinine of 2.3 mg/dl, indicating acute renal injury. Vitamin B12 was 195 pg/ml, which also showed a megaloblastic picture. She was catheterized right away, and frank haematuria was discovered. Her Hb was 9.8gm/dl after 2 units of PRC and 5 units of Platelets were transfused, and her Platelets were 96,000/cumm. Scrub Typhus, Dengue Fever, and Malaria Fever Profiles were all negative. IgM for Leptospirosis, on the other hand, was positive. Hepatitis A, B, C, E, CMV, EBV, and HIV (Cytomegalovirus, Epstein barr virus, Human Immunodeficiency Virus) were all found to be not positive in a serological test for infection. Cultures of blood & urine were also not positive. The hepatobiliary system was ultrasounded and found to be normal, with no hepatic abnormalities or intrahepatic biliary ductal dilatation. The common bile duct was not inflated. A Doppler ultrasound of the liver revealed no indication of hepatic venous thrombosis & a patent portal vein. In light of low platelets and haptoglobin, elevated uric acid and LDH, & proteinuria, the working diagnosis was an atypical HELLP syndrome (lack of hypertension). After her RT-PCR (Reverse Transcriptase-Polymerase Chain Reaction) came back positive, she was transported to the isolation labour ward on the same day. Given her condition and the time limitation, an immediate physician consultation was sought (close to term). She was given a stat dose of Azithromycin 1gm (as our joint team of doctors were apprehensive to start Doxycycline during the Antenatal trimester), as well as Injectable Ethamsylate and Vitamin K to stop any internal bleeding. Because of the risk of nephrotoxicity, aminoglycosides and NSAIDs (Non-Steroidal Anti Inflammatory Drugs) were to be avoided. The AKI picture, as well as the haematuria, improved following appropriate hydration (Creat-0.7). On the same day, she began spontaneous labour, which was aided by artificial rupture of membranes at 3-4cm cervical dilatation at 38+4 weeks, however there was significant foetal bradycardia, necessitating an urgent LSCS to deliver a Female baby with Apgar 9.9 and a birth weight of 1,736 g. The pH of the arterial cord was 7.272, lactate was 3.01 mmol/L, and the base excess was -8.7, whereas the venous pH was 7.318, lactate was 2.91 mmol/L, and the BE was -10.6 mEq/L. The baby was admitted to the NICU due to low birth weight and was discharged following a period of observation on day two of life. Histology of the placenta revealed no apparent abnormalities. On the evening of the section, the mother was

transfused with 5 units of platelets, and her post-operative blood count was as follows: TLC-16,100/cumm; PLT-1.2 lakh/cumm; Hb 9.7 gm/dl. The patient had constant fever spikes (about 103 and 104 degrees Fahrenheit on days 5 and 6), therefore on day 6, a 5-day course of injectable Doxycycline and Vitamin C was started, with the recommendation to stop breastfeeding for two weeks. For probable Listeria, the baby was given IV ampicillin and gentamicin. Breastfeeding was stopped for 5 days while the mother was on injectable Doxycycline, then resumed. Her liver function tests and a kidney panel both came back normal. She had no manifestations of congenital leptospirosis & was released at 1,800 grams on day 11 of her life.

3. DISCUSSION

In the literature, just a few cases of leptospirosis in pregnancy have been described. Infections in humans can be caught directly through contaminated animal urine or tissue, particularly that of rats, or secondarily through polluted water, soil, or vegetation [1]. Leptospirosis can be minor or severe, ranging from a viral infection to a multisystemic disease. Fever, headache, chills, abdominal pain, diarrhoea, anorexia, vomiting, lymphadenopathy, rash, and hepatosplenomegaly are some of the symptoms [3]. Icteric leptospirosis, also called as Weil's syndrome, is a kind of leptospirosis that causes liver, renal, and vascular failure. It affects 5-10% of people and has a 20-40% fatality rate [3]. IgM ELISA, IgM/immunoglobulin G (IgG) ELISA, and real-time DNA polymerase chain reaction of blood, urine & CSF are some of the laboratory procedures used to detect for leptospirosis (CSF). A single titre of 1:200 IgM antibodies or a four-fold increase in microscopic agglutination testing titre collected during the 1st and 4th week of sickness, or body fluids or tissue cultures of leptospire are used to make a diagnosis of leptospirosis [4]. These patients have responded well to medicines such as penicillin G, streptomycin, chloramphenicol, doxycycline and erythromycin [4]. According to the WHO, depending on the stage of pregnancy, leptospirosis can cause abortion, foetal death, stillbirth, or congenital leptospirosis in women [5]. In view of prenatal consequences, Yechiel et al [6] investigated at 15 previously reported cases of leptospirosis in pregnancy, finding that 8 women had miscarriages, 2 had healthy newborns, & 4 had active leptospirosis. Leptospirosis is conveyed by breast milk and can

cause newborn leptospirosis, according to Puliyaath et al. [3]. As a result, moms who suspect postpartum leptospirosis should withhold breastfeeding immediately & get their newborn tested for Leptospirosis. Pregnancy-related liver sickness, like acute fatty liver of pregnancy, HELLP, and obstetric cholestasis, can be distinguished from non-pregnancy-related liver sickness, such as gallstones, hepatitis, or other infections. HELLP syndrome and AFLP are potential differentials for abdominal pain presenting with jaundice, hemolysis, increased transaminases & coagulation disturbances in the third trimester [2]. Both illnesses have comparable clinical and laboratory symptoms, making correct diagnosis difficult [7]. In AFLP, hypoglycemia will be present in AFLP, and a liver biopsy is recommended to exclude the diagnosis. Given the patient's travel and hygiene history, an infection is quite likely, and leptospirosis must be ruled out. Finally, because to its unusual and non-specific clinical appearance, leptospirosis is rare & harder to identify. For minimising serious consequences of early abortions, stillbirths, and neonatal leptospirosis, its critical to have a high index of suspicion, provide early detection, and care. Because leptospirosis is a rare infection that might mimic other illnesses such as HELLP or acute fatty liver in pregnancy, a high degree of doubt is required for an early recognition. Early abortions, stillbirths, premature labour, and newborn leptospirosis are all complications of leptospirosis that obstetricians and gynaecologists should be aware of. In the management of leptospirosis, multidisciplinary treatment involving nephrologists, haematologists, gastro physicians, obstetricians, & the infectious disease team is required, particularly in patients with severe leptospirosis or Weil's syndrome.

However, there are certain drawbacks. The diagnosis of Leptospirosis in the current article has been only on the basis of IgM positivity, but it has two disadvantages. One, it can be false positive and second, once positive it can persist for years. So a diagnosis of acute infection, just on the basis of IgM can be misleading [8].

There is a significant overlap between the clinical findings in novel coronavirus disease 2019 (COVID-19) and hemolysis, elevated liver enzymes, and low platelets syndrome (HELLP). So the clinical picture described may have been due to COVID-19 itself [9].

4. CONCLUSION

CTG (Cardio tocograph) revealed signs of foetal distress, and a decision for an emergency LSCS was taken (Lower Segment Caesarean Section). The histology of the placenta after the section revealed normal findings. Doxycycline was initiated with a neonatal feeding regimen that was acceptable. On day two of life, the newborn had no indications of inherited leptospirosis and was removed from Neonatal Intensive Care. Within one week, the patient's symptoms had disappeared, and her biochemistry had went back to normal within 2 weeks.

CONSENT AND ETHICAL APPROVAL

As per university standard guideline, participant consent and ethical approval have been collected and preserved by the authors

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
<https://www.sdiarticle4.com/review-history/73580>