

Swine Flu in Pregnancy with Severe Adult Respiratory Distress Syndrome on Ventilator—Normal Delivery

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ABSTRACT

We report a 29-year-old primigravida at 31 weeks with severe dyspnea needing noninvasive ventilation. Chest X-ray revealed upper lobe infiltration, hence the patient was treated for atypical pneumonia for a day but ventilated due to poor saturation. D-Dimer was elevated hence heparinized and CTPA and echo done, but no evidence of pulmonary embolism. Suspected as H1N1 and started on Tamiflu after sending throat swabs, which came out as positive for H1N1. She was deteriorating despite respiratory and other supports. Hence labor was induced with prostaglandins and oxytocin with prophylactic steroids. She delivered normally with intact perineum on ventilator with atracurium. She made a dramatic recovery post delivery. Patient and baby were discharged home without any morbidity on the 15th post-natal day. We present this case for its good outcome despite the highest prediction of maternal mortality.

Keywords: Disease outbreaks, Influenza, Pregnancy, World Health Organization.

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INTRODUCTION

This paper presents a case of influenza in pregnancy with severe ARDS on ventilator. The swine flu novel influenza—H1N1 pandemic Phase 6 alert was declared by the World Health Organization in June 2009. In the recent H1N1 2009 pandemic, there was a higher rate of hospital admission in pregnant women by 5 times compared to the general population and seven times higher risk of admission to an intensive care unit. Many of these cases occur during the third trimester of pregnancy in patients with preexisting asthma, obesity, and smoking and were associated with complications like thrombocytopenia, pneumonia, and respiratory failure.

CASE DESCRIPTION

A 29-year-old pregnant woman was referred to our tertiary care hospital, with complaints of breathlessness for 2 days. History of 8 months amenorrhea, complaints of cough, decreased appetite. There was no history of associated chest pain or palpitation or fever or headache. The patient had a history of wheezing till two years of age and later became asymptomatic. On examination, she was conscious, alert, afebrile with room air saturation of 93%. Cardiovascular and respiratory systems were normal, and fetal heart rate was normal. She was admitted to the intensive care unit and advised arterial blood gas analysis, chest X-ray with abdominal shielding and D-dimer. X-ray of the chest revealed upper lobe infiltration. D-Dimer value was 1.23, which was elevated. She was on nebulization and clarithromycin. On day two of admission, she was still breathless with saturation of 87–88% in room air, hence started on noninvasive ventilation (BIPAP). Suspecting pulmonary embolism ECG, CT pulmonary angiogram with high resolution CT was done. ECG showed sinus tachycardia, and echo was normal. CT pulmonary angiogram had no evidence of pulmonary thromboembolism. HRCT showed patchy areas of pneumonitis. She was on low molecular heparin 40 mg OD and thromboembolism deterrent stockings to prevent deep vein thrombosis. On day three, she was desaturating on noninvasive ventilation. Viral pneumonia was suspected and throat swab sent for H1N1 and started on Tablet Oseltamivir 150 mg orally twice daily suspecting

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swine flu and was put on mechanical ventilation. Atracurium 0.5 mg/kg/hour infusion with midazolam 1 mg/hour and fentanyl 100 mcg/hour infusion was continued after ventilation. She was deteriorating with oseltamivir and mechanical ventilation even after 36 hours, and hence we planned for delivery. On day four of admission prophylactic steroids Inj Betamethasone 12 mg IM, two doses 24 hours apart, was given for fetal lung maturity. Labor was simultaneously induced with mechanical dilatation, prostaglandins followed by oxytocin the next day. Patient was stable on high ventilator settings with atracurium. Labor progressed slowly and 48 hours after induction, on day 6 of admission, she delivered a boy baby vaginally with intact perineum of weight 1.6 kg with Apgar 4/10, 6/10, cord PH 7.227, and base excess –2.5. Baby was sent to neonatal intensive care unit in view of preterm low birth weight for further management. Third stage of labor was actively managed. Had mild atonic postpartum hemorrhage with blood loss of 600 mL and was managed medically. Post delivery, hemoglobin was 9.6 g. Postnatally, patient started improving dramatically and

was gradually weaned off from ventilator and was extubated on post-natal day six. Baby was evaluated for influenza postnatally and was found negative. Both mother and baby sent to home in stable condition on 15th post-natal day.

DISCUSSION

During the 2009 H1N1 pandemic, a disproportionate number of deaths occurred, with pregnant women accounting for 5 percent of all deaths, even though pregnant women with H1N1 account for only 1 percent of the US general population.¹

Influenza viruses are a group of RNA viruses belonging to the family Orthomyxoviridae. They are classified into 3 distinct genera: influenza A, B, and C. Influenza A and B strains cause seasonal infections.

Definitions for H1N1 according to CDC include the following: (1) confirmed case: an individual with an influenza-like illness (fever with oral temperature of 100 degree F or greater with cough or sore throat in the absence of a known cause and laboratory-confirmed H1N1 virus detected by either real-time RT-PCR or viral culture). (2) Probable case: an individual with influenza-like symptoms who has positive findings for influenza A on rapid antigen screening tests, but negative findings for H1 and H3 proteins by RT-PCR.

The incubation period for influenza is estimated to range from one to four days, with an average of two days.

Influenza infection can cause a wide range of disease symptoms, from asymptomatic to serious illness, characterized by sudden onset of fever, myalgia, and respiratory indications like nonproductive cough, sore throat, and rhinitis. In addition, children infected with influenza commonly present with otitis media, nausea, vomiting, and more frequently complaints of rhinorrhea.

Pregnant women have been shown to be at risk of respiratory complications, especially in the 2nd and 3rd trimesters. Pregnant women have been noted to have a four times higher risk of being hospitalized for complications compared to the nonpregnant population. Pregnant women are over-represented in the group of patients admitted to hospital requiring level two (high dependency care) or level three care (critical/intensive care). Observations from the USA indicate that H1N1 in pregnancy is noted by adverse pregnancy outcomes, such as spontaneous abortion, preterm birth, and fetal distress. Rapidly progressive pneumonia, respiratory failure, profound hypoxemia refractory to routine mechanical ventilation, ARDS, and secondary bacterial infections were found in 4.0–29.0%.

Diagnostic strategies for H1N1 viral infections include the proper collection of upper respiratory tract specimens and the selection of the best rapid screening and confirmatory tests. The CDC recommends rapid influenza antigen tests (RIATs) for screening. For diagnostic confirmation of novel influenza A (H1N1) viral infections, the CDC recommends either RT-PCR or viral culture.²

Appropriate adult antiviral medications and antiviral combinations include the following:

(1) Oseltamivir. Sensitivity testing has shown that pandemic H1N1 influenza A is susceptible to this neuraminidase inhibitor. (2) Zanamivir should be reserved for use in those areas where oseltamivir-resistant H1N1 influenza A virus is endemic or present. (3) Oseltamivir and amantadine/rimantadine. This combination may be used in oseltamivir-resistant individuals where zanamivir is contraindicated (i.e., those with asthma or obstructive airway disease). However, H1N1 is resistant to amantadine or rimantadine alone or in a combination which does not include a neuraminidase inhibitor such as oseltamivir or zanamivir.³

Oseltamivir (Food and Drug Administration-approved use in Pregnancy Category C) is the drug of choice for pregnant women with confirmed, probable, or suspected cases of H1N1. Oseltamivir 75 mg capsule twice per day for 5 days or Zanamivir Two 5 mg inhalations (10 mg total) twice per day. Longer treatment courses can be considered for patients who remain severely ill after five days of treatment. Some clinicians have recommended that severely ill patients be treated with double-dose oseltamivir 150 mg twice daily.

Fetal effects of influenza during pregnancy on the embryo or fetus have not been well-studied. Transplacental transmission of influenza virus appears to be rare, but has been documented. Some studies have suggested that influenza during pregnancy increases the risk for congenital abnormalities such as cleft lip, neural tube defects, and congenital heart defects.⁴ Since 2004, Centers for Disease Control (CDC) has recommended that all women who are pregnant or will be pregnant during influenza season receive the trivalent inactivated vaccine, regardless of trimester.⁵ The World Health Organization and CDC recommend that children and adults over the age of 6 months receive an influenza vaccination annually.⁶ Currently, there are three licensed seasonal vaccines administered in the United States: (1) a TIV (trivalent inactivated influenza vaccine), administered by intramuscular injection; (2) an LAIV (live attenuated influenza vaccine), delivered intranasally; and (3) an intradermally administered TIV preparation.

Breastfeeding during temporary separation by expressed feed should be encouraged; use of oseltamivir by breastfeeding mothers appears to pose no harm to their infants.⁷ There are no studies on the safety of zanamivir during breastfeeding.

Atracurium is a category C drug which crosses the placenta,^{8,9} which can be used if the potential benefits outweigh the unknown hazards.

CONCLUSION

Pregnant women, particularly in the second half of pregnancy, are more likely than nonpregnant women to develop critical illnesses associated with 2009 H1N1 influenza. Among women who developed critical illness, the outcomes were poor, including death of the mother or baby. The clinical decision to deliver and relieve the hormonal and mechanical effects on respiratory compromise which changed the course of events and conducting a normal delivery on a ventilated patient although the use of muscle relaxants were salient features of our patient. We present this case for the good maternal and perinatal outcome despite a high risk for mortality in a developing country, proving that with good team work at a tertiary level care we can reduce our maternal and perinatal mortality.

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