Pneumonia in Pregnancy: Pneumocystis Jiroveci Pneumonia

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Citation

S Aleyas, B Vahid. *Pneumonia in Pregnancy: Pneumocystis Jiroveci Pneumonia*. The Internet Journal of Pulmonary Medicine. 2006 Volume 7 Number 1.

Abstract

The incidence of pneumonia in pregnancy is not different from that in non-pregnant adults 20 to 40 year-old and has been reported in 1.1 to 2.7 per 1,000 deliveries. We report about a 36 year old African American woman presented to the emergency department with 2 week history of dry cough and increasing dyspnea on exertion. The differential diagnoses of severe CAP in this setting encompass both infectious and noninfectious etiologies. Considerations are atypical bacterial pneumonia, viral pneumonia, Pneumocystis jiroveci (Pneumocystic carinii) pneumonia, aspiration pneumonitis, sarcoidosis, hypersensitivity pneumonitis, and acute eosinophilic pneumonia.

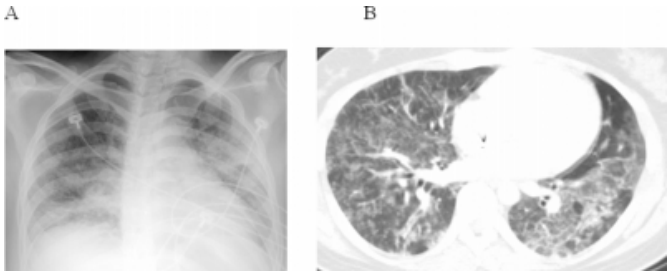
CASE REPORT

A 36 year old African American woman presented to the emergency department with 2 week history of dry cough and increasing dyspnea on exertion. The patient denied fever, chills, or night sweats. The patient was 17 week pregnant. She had an atrial septal defect (ASD) repair one year before presentation. She was life-long non-smoker and did not use intravenous illicit drugs. Physical examination showed temperature of 99.8 °F, heart rate of 107 beats/min, respiratory rate of 37 breaths/min, blood pressure of 124/85 mmHg, and oxygen saturation of 100% on 2 liters of supplemental oxygen. Enlarged lymph nodes were appreciated in cervical, supraclavicular, axillary, and inguinal areas. Chest auscultation revealed decreased breath sounds at bases with scattered rhonchi. Cardiac, abdominal, skin, and neurological exam were unremarkable.

Laboratory data included white blood cell count of 6.3 x 10^3/mL, pH of 7.41, pO2 of 230 mmHg, PCo2 of 29 mmHg, B- natriuretic peptide of 29 pg/dL, and normal serum chemistry. A nasal swab for influenza virus (A and B) was negative. A chest radiograph showed multifocal consolidation with possible underlying background of pulmonary edema (Figure1A). A computed tomography (CT) scan of chest showed severe bilateral interstitial lung disease with superimposed pulmonary edema (Figure1B).

Figure 1

Figure1: A. Chest radiograph showing multifocal consolidation with possible underlying background of pulmonary edema. B. CT scan of chest showing severe bilateral interstitial lung disease with superimposed pulmonary edema.



An echocardiogram showed a normal left ventricular ejection fraction of 65% and well deployed closure of ASD.

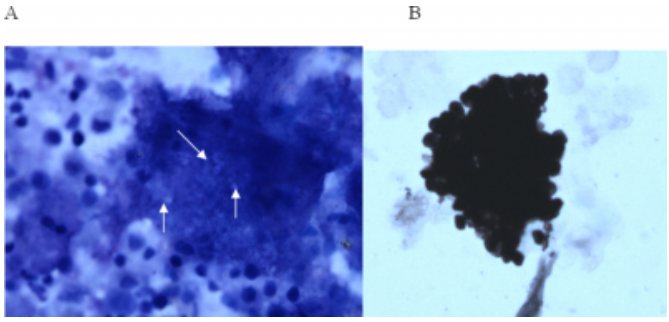
The differential diagnoses of severe CAP in this setting encompass both infectious and noninfectious etiologies. Considerations are atypical bacterial pneumonia, viral pneumonia, Pneumocystis jiroveci (Pneumocystic carinii) pneumonia, aspiration pneumonitis, sarcoidosis, hypersensitivity pneumonitis, and acute eosinophilic pneumonia.

Bronchoscopy with BAL was performed to exclude infectious etiologies. Bronchoalveolar lavage diff-quick stain and silver stain was positive for Pneumocystis jiroveci (Figure2). The human immunodeficiency virus (HIV) antibody was positive and CD4 count was 208 /mL.

Treatment with trimethoprim/sulfamethoxazole and prednisone was started. She was treated with 21 days of trimethoprim/sulfamethoxazole. The patient recovered, but pregnancy resulted in a low-birth weight newborn. She was referred to infectious disease clinic for highly active anti-retroviral therapy.

Figure 2

Figure 2: A. Diff-quick stain (high power) showing an alveolar cast and ghost cells (pneumocystis) (arrows). B. Silver stain showing cluster of pneumocystis.



DISCUSSION

The incidence of pneumonia in pregnancy is not different from that in non-pregnant adults 20 to 40 year-old and has been reported in 1.1 to 2.7 per 1,000 deliveries. The clinical manifestations of pneumonia are similar to non-pregnant women and include cough (78%), fever (60%), dyspnea (60%), and sputum production (50%). Although mortality from pneumonia in pregnancy is similar to rates in non-pregnant adults, pneumonia increases the risk of maternal complications. Increased risk of respiratory failure and mechanical ventilation has been reported in pregnancy. Mothers with pneumonia are more likely to deliver early and have infants of lower birth weight. Although neonatal mortality rate due to ranges from 1.9% to 12% in different series, anomaly in newborns have not been associated with antepartum maternal pneumonia.[1,2,3,4]

The enlarging uterus causes anatomical changes (elevation of the diaphragm, increase in the transverse diameter of the chest) that decrease the mother's ability to clear respiratory secretions. Relaxation of the gastro-esophageal sphincter, delayed gastric emptying, and raised intragastric pressure due to abdominal compression by the uterus increase mother's risk of aspiration.[1,2,3,4] Risk factors for maternal pneumonia are human immunodeficiency virus infection, sickle cell disease, cystic fibrosis, antepartum systemic corticosteroid therapy, asthma, and anemia.[5] Mother's age or parity has not been associated with an increased rate of pneumonia during pregnancy, but the incidence of pneumonia increases with gestational age. Fifty percent to 80% of pneumonias are reported in third trimester in different series.[1,2,3,4]

The most common pathogens in pregnancy are Streptococcus pneumoniae, Haemophilus influenzae, and Mycoplasma pneumoniae. Legionella pneumophila pneumonia in pregnancy is rare. Viral respiratory infections (varicella, influenza, and severe acute respiratory syndrome) also can cause maternal pneumonia (about 5% of cases). Fungal pneumonias are rare in pregnancy. Cryptococcus neoformans, Histoplasma capsulatum, Sporothrix schenckii, Blastomyces dermatitidis, and Coccidioides immitis can cause pneumonia that is usually mild and self-limited disease. Dissemination of coccidioidomycosis pneumonia in the third trimester of pregnancy occurs in 20% of patients with an increased risk of preterm delivery, perinatal mortality, and a high rate of maternal mortality.[1,2,3,4, 6]

Macrolides and beta-lactam antibiotics have a favorable safety profile in pregnancy and provide adequate coverage for the most common organisms. Although some cases of hemorrhage have been reported during pregnancy, rifampicin has been used safely for treatment of severe Legionella infection. Antiviral therapies can reduce maternal morbidity and mortality from viral pneumonia during pregnancy. Amphotericin B is the antifungal agent of choice during pregnancy. Influenza and pneumococcal vaccinations are effective in preventing pneumonia in high-risk populations and reducing complications and death. No adverse fetal outcomes have been identified in women who received the inactivated vaccine during pregnancy.

[1,2,3,4,5,6,7,8]

The mortality rate of Pneumocystis jiroveci (Pneumocystic carinii) pneumonia in pregnancy is about 50%, which is significantly higher than non-pregnant patients. Ahmad et al. demonstrated a 59% rate of respiratory failure with need for mechanical ventilation in these patients. The risk is higher in second and third trimester of pregnancy. Trimethoprim/sulfamethoxazole with/with out steroids remains the treatment of choice. Unconjugated hyperbilirubinemia is a potential complication in newborns whose mothers were treated with trimethoprim/sulfamethoxazole.[9]

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