A Pregnant Woman with Abnormal Chest Radiograph

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A 17-year-old female is 6 weeks pregnant (G3P2) without significant past medical history presents with a 4-day history of fever, non-productive cough and right-sided pleuritic pain. The patient reports no history of travel outside the United States, aspiration or loss of consciousness, contact with farm animals or sick contacts other than daughter with recent viral infection. On admission, her vital signs were within normal limits. Her lab results showed leukocytosis with neutrophilia and thrombocytosis, chemistries were essentially normal. Quantiferon gold was negative. Her chest X-ray as follows:

Among the following options, the best empiric antibiotic choice upon admission would be:

lungabscess

1. Vancomycin and piperacillin-tazobactam
2. Rifampin, isoniazid, ethambutol and pyrazinamide
3. Ceftriaxone and azithromycin
4. Ampicillin-sulbactam

Answer: **4. Ampicillin-sulbactam**

Discussion:

The patient in the above question is reasonably healthy and is suffering from a primary lung abscess. Nearly 80 % of the pulmonary abscesses occur in fairly healthy individuals with heightened susceptibility to aspiration (1). The other 20 % arise secondary to an obstructive etiology, thoracic surgery or are a result of immunocompromised state such as HIV or transplantation. Presence of fevers, productive cough with putrid sputum and pleuritic chest pain should point the physician towards suspicion of lung abscess (1). The suspicion can be confirmed with a chest radiogram which often declares the abscess with an air-fluid level which is very well seen in the image above.

Most of primary lung abscesses are polymicrobial in nature and carry heavy burden of streptococci and oral anaerobes (1, 2). Hence, it becomes imperative to select an antibiotic which will cover oral anaerobes very well. The patient in this particular case is pregnant and

safety of her fetus will also guide the antibiotic selection. Because many anaerobic species produce beta lactamases, a combination of beta-lactam plus beta-lactamase inhibitor (e.g. ampicillin-sulbactam) or clindamycin are thought to be the most appropriate choices (1). Hence, the answer D is the correct answer. Ampicillin-sulbactam is a pregnancy category B drug and safe to be used in pregnancy.

Answer A is incorrect because we do not need to cover *Pseudomonas aeruginosa* or methicillin-resistant *Staphylococcus aureus* without risk factors such as recent hospitalization. Additionally, vancomycin is a category D and unsafe to be used in pregnancy. Answer B is incorrect because patient's respiratory symptoms are fairly acute unlike the chronic symptoms of patients suffering from pulmonary tuberculosis. Moreover, she had no risk factors for tuberculosis exposure and her Quantiferon gold test was negative. Answer C is a combination of choice to treat community acquired pneumonia but not lung abscess because this particular combination will not provide optimal anaerobic coverage and in the other hand is providing atypical coverage that we don't need.

Suggested References:

1. Lorber B: Bacterial lung abscess. Mandell GL, Bennett JE, Dolin R (Eds). Principles and Practice of Infectious Disease. Eighth edition, 71, 855-859.
2. Bartlett JG, Gorbach SL, and Finegold SM: The bacteriology of aspiration pneumonia. Am J Med 1974; 56: pp. 202-207.