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Lung Abscess

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Abstract :

Lung abscess is a type of liquefactive necrosis of the lung tissue and formation of cavities “more than 2 cm” containing necrotic debris or fluid caused by microbial infection. This pus filled cavity is often caused by aspiration, which may occur during anesthesia, sedation, or unconsciousness from injury, It has several ways to enter to the body, and we can treat it with antibiotic.

Introduction :

Lung abscess “pulmonary abscess” describes a local suppurative process within the lung, characterized by necrosis of lung tissue. Oropharyngeal surgical procedures, sinobronchial infections, dental sepsis, and bronchiectasis play important roles in their development. Any pathogen can produce an abscess, the commonly isolated organisms include aerobic and anaerobic *streptococci*, *Staphylococcus aureus*, and a host of Gram-negative organisms. Mixed infections occur often because of the important causal role that inhalation of foreign material plays. Anaerobic organisms normally found in the oral cavity, including members of the *Bacteroides*, *Fusobacterium*, and *Peptococcus* species, are the exclusive isolates in about 60% of cases. {1}

Discussion:

Lung abscess can be divided into acute (less than 6 weeks) and chronic (more than 6 weeks). It can be called primary as a result of aspiration of oropharyngeal secretions (dental/periodontal) infection, paranasal sinusitis, disturbance states of consciousness, swelling disorders, gastro-esophageal reflux disease, frequent vomiting, necrotizing pneumonia or in immunocompromised patients. The secondary lung abscesses can occur in bronchial obstructions (by tumor, foreign body or enlarged lymph nodes), with coexisting lung diseases (bronchiectasis, bullous emphysema, cystic fibrosis, infected pulmonary infarcts, lung contusion), then it can spread from extrapulmonary sites-hematogenous (abdominal sepsis, infective endocarditis, infected canula or central venous catheter, septic thromboembolisms) or by direct spreading (tracheoesophageal fistula, subphrenic abscess). Based on way of spreading, the lung abscess can be bronchogenic (aspiration and inhalation) and hematogenic-dissemination from other infected sites {2}. The causes of a lung abscess as we know they are two types of bacteria each one develops from different strains, and can enter to the body by different ways:

- Aspiration of infective material (the most frequent cause): This is particularly common in acute alcoholism, coma, anesthesia, sinusitis, gingivodental sepsis, and debilitation in which the cough reflexes are depressed. Aspiration of gastric contents is serious because the gastric acidity adds to the irritant role of the food particles, and in the course of aspiration, mouth organisms are inevitably introduced.
- Antecedent primary bacterial infection: Post-pneumonic abscess formations are usually associated with *S. aureus*, *Klebsiella pneumoniae*, and the type 3 pneumococcus. Fungal infections and bronchiectasis

are additional antecedents to lung abscess formation. Post-transplant or otherwise immunosuppressed individuals are at special risk for this complication. • Septic embolism: Infected emboli from thrombophlebitis in any portion of the systemic venous circulation or from the vegetations of infective bacterial endocarditis on the right side of the heart are trapped in the lung .• Neoplasia: Secondary infection is particularly common in the bronchopulmonary segment obstructed by a primary or secondary malignancy (post obstructive pneumonia).• Miscellaneous: Direct traumatic penetrations of the lungs; spread of infections from a neighboring organ, such as suppuration in the esophagus, spine, sub phrenic space, or pleural cavity; and hematogenous seeding of the lung by pyogenic organisms all may lead to lung abscess formation. When all these causes are excluded, there are still cases in which no reasonable basis for the abscess formation can be identified. These are referred to as primary cryptogenic lung abscesses. It is also typically filled with bacteria, either from an infection or from normal flora in the body(in the mouth, respiratory tract, or stomach). Alcoholism people are strongly predisposed to developing lung abscess because they often experience bouts of vomiting and altered levels of consciousness. These condition increase the likelihood of inhaling the bacteria into the lungs, which can cause an infection. An additional risk factor is that alcoholism people often have weakened immune systems due to poor overall health and nutrition{1}. Symptoms of lung abscess are similar to symptoms of other lung condition, including pneumonia and tuberculosis. The most noticeable symptoms of lung abscess is productive cough, and the contents that are coughed up may be bloody or pus-like, with a foul odor, bad breath, fever of 101°F , or higher chills chest, night sweats and weight loss{3}. Most lung abscess can be treated with a course of antibiotics, Including penicillin, clindamycin, carbopenems and quioulones. The clinical efficacy of clindamycin was compared with that of penicillin in a randomized study of the treatment of community-acquired putrid lung abscess. After starting therapy, patients treated with clindamycin had a shorter febrile period and fewer days of fetid sputum than patients treated with penicillin (mean 4.4 versus 7.6 days and 4.2 versus 8.0 days, respectively, $p < 0.05$). Four of 20 patients treated with penicillin had clinically significant pulmonary or pleural extension of their infection within 10 days after starting therapy; this was not found in any of 19 patients treated with clindamycin ($p < 0.05$). Penicillin treatment failed in two additional patients after 20 days of therapy. Within 1 month after treatment, 1 of 4 patients given penicillin for 3 weeks had relapse, but none of the 13 patients given clindamycin for 3 or 6 weeks, and none of the 5 patients given penicillin for 6 weeks had relapse. Overall, only 8 of 15 patients treated with penicillin who could be followed to the end of the study were cured, whereas all 13 patients treated with clindamycin who could be followed were cured ($p < 0.01$). These results suggest that penicillin may not be optimal therapy for anaerobic lung abscess{4}.

Conclusion :

- 1-Lung abscess is a type of liquefactive necrosis, and can be acute or chronic.
- 2-It caused by microbial infection “aerobic and anaerobic bacteria”, and has several ways to enter the body.
- 3-Alcoholism people are strongly predisposed to developing lung abscess because they often have weakened immune systems.
- 4- Symptoms of lung abscess are similar to other lung problems.

5-Lung abscess treated with antibiotics, and some bacteria have a resistance to some types of antibiotics.

6- Clindamycin is more effective than penicillin in the anaerobic lung abscess therapy.

References :

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