

Free research paper on legionnaires disease

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Introduction

Legionnaires' disease was first recognized in 1976 following its breakout in a hotel in Philadelphia housing delegates who had attended American Legion convention (Lynch, Brightman, & Greenberg, 1994). Its causative agent is a bacterium known as Legionella pneumophila (Lynch, Brightman, & Greenberg, 1994). This disease presents with symptoms similar to those associated with pneumonia. Legionella pneumophila also cause another disease known as Pontiac fever (PF). Pontiac fever and Legionnaires' disease are collectively referred to as legionellosis. According to Centers for Disease Control and Prevention (2011), crude national incidence rate of legionellosis in the United States increased by 192% from 2000 to 2009.

Etiology/Pathology

Legionella pneumophila inhabits natural bodies of water such as rivers and lakes. Researches that have been conducted so far reveal that Legionella

pneumophila is not transmitted from one person to another. Instead, the bacterium is mainly transmitted to susceptible hosts via the following possible routes: aspiration, inhalation of particles of water containing the pathogen, and aerosolization.

Once the bacteria reach the lungs, macrophages present in the alveoli phagocytize them causing them to release virulent factors to aid in their replication and survival. High population of the bacteria may be present in one macrophage. Normally, the bacteria grow readily inside cells hence the rapid multiplication inside macrophages (Hilbi, Jarraud, Hartland, & Buchrieser, 2010). Eventually, the macrophage dies and releases the bacteria. As the bacteria continue to multiply, more macrophages, neutrophils, erythrocytes, and the bacteria themselves fill the alveoli. Consequently, an inflammatory response is initiated by cytokines and chemokine. Clinical symptoms then begin to appear.

The disease is mostly prevalent among middle-aged people. People with suppressed immune systems are more prone to *Legionella pneumophila* infection than their counterparts with normal immune systems. For instance, people suffering from cancer or chronic diseases such as diabetic and chronic kidney diseases are highly prone to this infection.

Signs and Symptoms

Symptoms of legionnaire's disease begin to occur between two to ten days after infection with *Legionella pneumophila* bacteria (Lynch, Brightman, & Greenberg, 1994). The preliminary symptoms are; sudden onset of fever, headache, chills, and general body fatigue. Subsequently, nausea, vomiting, high fever, and diarrhea occur (Bartram, 2007). Next, patients develop

difficulty with breathing and then pneumonia. This type of pneumonia may be fatal if not treated. It can result into 15% mortality rate (Lynch, Brightman, & Greenberg, 1994). Mental problems such as hallucination and confusion may also occur.

Medical Treatment

Diagnosis is based on presence of symptoms for pneumonia. The symptoms mainly relied on are mental changes and diarrhea. Legionnaire's disease is then distinguished from pneumonia through a special laboratory test. The test isolates legionella bacteria from sputum hence confirming the diagnosis.

Legionnaire's disease is treated with two main antibiotics: rifampin and erythromycin. Erythromycin has been used for long in treating the disease. However, azithromycin, a less toxic antibiotic, has since replaced it (Lynch, Brightman, & Greenberg, 1994). Another drug suitable for treating the disease is quinolones as seen in some studies (Lynch, Brightman, & Greenberg, 1994). Lynch, Brightman, and Greenberg (1994) also state that timely chemotherapy application can lead to recovery within three to five days.

Nursing Indications/Teachings

Individual and collective efforts are important in preventing the break out of Legionnaire's disease. At individual level, the following approaches can help minimize chances of break out of the Legionnaire's disease:

- Seeking medical help whenever any symptom of Legionnaire's disease is detected

- Avoiding water systems that could be contaminated in for people who are
- Clearing stagnant water from the compound.

People in charge of water systems should ensure that the systems are properly maintained. For example, at work places, employers should inspect water systems regularly to ensure they are in proper conditions so that break out of the disease is minimized. Land lords should also do the same. Much emphasis is laid on water systems since *Legionella pneumophila* lives in water bodies.

Conclusion

Even though Legionnaire's disease is a serious threat to society, it can be prevented. Furthermore, given that its causative agent, *Legionella pneumophila*, cannot be transmitted from one person to another, preventing the outbreak of the disease is easier. Since natural water bodies are the main sources of the bacteria, water obtained from them should be treated properly before consumption. A collective responsibility is imperative to make environment free from *Legionella pneumophila* infections.

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