Tuberculosis: Early Diagnosis and Treatment

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TUBERCULOSIS: Early Diagnosis And Treatment
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Introduction
Although there are measures in place to control TB cases in the US, TB is prevalent and has high mortality and mortality rate. This issue is due to failure to identify and treat the disease as early as possible, especially in the latent stage. The late diagnosis of the disease causes delay in treatment which may result in complications or even death. Also, TB cases have been recorded among foreign-born and immigrants who are very vulnerable, but some of these immigrants are not screened as required. Therefore, it is essential for nurses to establish good rapport with the patient, educate and follow guidelines and policy in screening patients. This issue is due to failure to identify and treat the disease as early as possible, especially in the latent stage. The late diagnosis of the disease causes delay in treatment which may result in complications or even death. Also, TB cases have been recorded among foreign-born and immigrants who are very vulnerable, but some of these immigrants are not screened as required. Therefore, it is essential for nurses to establish good rapport with the patient, educate and follow guidelines and policy in screening patients.

Underlying Pathophysiology
Tuberculosis (TB) is a contagious disease which usually affects the lungs and can spread to affect the kidney, spine, and other organs, and it is caused by a bacterium known as the mycobacterium tuberculosis (CDC, 2016). The mycobacterium tuberculosis is spread by airborne inhalation when an infected person coughs, sneezes, or talks (Amerena, 2017). The bacterium is injected and may settle in the alveoli of the lung, and the immunologic reaction may vary from 2 to 10 weeks (Amerena, 2017). Majority of the tubercular bacilli are destroyed by the alveolar macrophages through ingestion. The remaining bacilli which may live will then multiply and spread to other organs through the lymphatic system and the bloodstream (CDC, 2016). There are two stages of the disease, the latent TB stage where an individual is infected by the bacteria for a longer period but is not infectious and do not show any signs and symptoms of the disease, and the active TB stage where the individual shows signs and symptoms of the disease. According to Amerena (2017), about 10% of individuals in the latent phase can develop quickly to active TB if they become immune-suppressed.

In the latent tuberculosis infection (LTBI), the bacilli is ingested by the macrophages and the immune system or the white blood cells kills or encapsulate majority of the bacteria which forms the granuloma (CDC, 2016). Therefore individuals in the LTBI stage
• Do not have the TB disease
• Cannot spread the TB disease
• May not show any symptom or culture
• Will react positive to the Mantoux tuberculin skin test
• Will have normal chest X-ray
• Can receive treatment to prevent active TB (CDC, 2016).

To screen for TB, the Mantoux tuberculin skin test is used. The usual diagnostic test is the acid-fast bacillus but diagnosis must be confirmed with sputum smear and culture. Rifampicin, isoniazid, ethambutol, and pyrazinamide are the 5 recommended antibiotics for TB treatment (Amerena, 2017). In countries with high rate of TB, children who are 5 years and below are immunized with Bacillus Calmette-Guerin (BCG) (Amerena, 2017).

Signs And Symptoms
Individuals in the latent stage do not show any signs and symptoms. Signs and symptoms observed in the active phase include:

- Persistent cough
- Fever
- Loss of appetite
- Weight loss
- Night sweats
- Hemoptysis
- Chills
- Chest pain

Tuberculosis may spread and affect other parts of the body like the spine or the lymph nodes, the kidney, and the brain. The development of the disease in other organs may cause some specific symptoms such as back pain in patients with TB of the spine, and hematuria in patients whose kidneys are infected.

Significance of Pathophysiology
Late diagnosis of TB remains an issue in the management of the disease. There is increase in mortality rate associated with late diagnosis because patients usually present with a severe form of the disease. Also, late diagnosis increases the rate of spread or the transmission rate (Furlan, Marcov, & Silva, 2016). Understanding the pathophysiology of tuberculosis will aid in the early diagnosis especially in the latent phase where diagnosis is most missed. Early diagnosis facilitates the control and management of TB due to the early initiation of treatment (Furlan, Marcov, & Silva, 2014).

Nursing Implications
It is necessary for the advanced practice nurse to understand the pathophysiology of the disease so that they can
• Make early diagnosis
• Initiate treatment as early as possible
• Monitor TB patients to detect changes and complications (Furlan, Marcov, & Silva, 2016)
• Address patient’s concerns related to treatment
• Help the spread or control TB disease
• Provide adequate education for the patient and the community
• Follow the policies and practice in screening patients especially foreign-born patients

Also nurses should have adequate knowledge about TB as the can provide quality care to patients (Almeida et al, 2019), which include using the appropriate personal protective equipment (PPE), TB test and screening policy and guidelines, and postexposure screening and testing (Silva et al, 2019).

One factor which facilitates the late diagnosis and treatment of TB is the issue of self medication and drug (De Gocalves de Oliveira et al, 2010). The issue of medication adherence may be due to the duration of treatment and adverse reactions associated with the medications. It is therefore necessary for nurses to establish good rapport with the patient and their families to enhance treatment adherence.

Tuberculosis
Tuberculosis control and eradication in the U.S. have been successful but in a slow pace. Diagnosing TB disease as early as possible as well as initiating treatment will help in the control of the disease. Screening plays a major role in the early detection of TB. According to (Singer, Noppert, & Jenkinson, 2017), both federal and state should incorporate the CDC guidelines in creating their TB screening policy especially TB screening policy for foreign-born and immigrants. Also, reporting every TB case will help in controlling the disease in the communities. Early diagnosis and treatment, monitoring TB patients, educating the community, and appropriate TB screening policies will contribute in eradicating TB.

Additional Sources

Reference