



Urban realities unveiled: A tale of tuberculosis, lifestyle, and recovery in a young metro dweller

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Abstract

This case study delves into the medical journey of a young unmarried woman, a chain smoker residing in a metropolitan city. Initially diagnosed with pneumonia, her condition escalated, leading to a series of diagnostic interventions. The subsequent discovery of multiple lung cavities and fibrosis on a high-resolution computed tomography (HRCT) scan pointed strongly toward tuberculosis (TB). Confirmed through Sputum GenXpert testing, her case highlights the intricate relationship between lifestyle choices, urban living, and susceptibility to infections. Swift initiation of anti-tuberculosis treatment (ATT) is crucial for her recovery, while also accentuating the need for comprehensive healthcare solutions tailored to urban settings and raising awareness about the risks associated with habits like smoking.

Keywords: Smoking, smoking and TB, smoking and female

Introduction

Tuberculosis (TB) is major public health problem in developing countries, Approximately 1.3 billion people smoke tobacco products and most of them live in low- or middle-income countries, where the burden of TB is also very high. TB is leading cause of death worldwide [1] Smoking causes 9% of death worldwide reported by World Health Organization (WHO) [2] Tobacco smoking has been shown to associate with TB infection. Moreover, cigarette smoking is also associated with negative prognosis of TB [3]. Smoking may affect many organ systems, but the lungs suffer by far the most damage. Smoking damages the lungs and impacts the body's immune system, making smokers more susceptible to TB infection. The occurrence of TB has been shown to be linked to altered immune response and multiple defects in immune cells such as macrophages, monocytes and CD4 lymphocytes [4]. Other mechanisms, such as mechanical disruption of cilia function and hormonal effects, could also appear secondarily to smoking [5].

Therefore, all these factors may contribute to the increased susceptibility of an individual to develop TB infection. Several studies found that significantly more current smokers developed TB and subsequently died within the follow-up period than non-smokers [6-8]. Smoking and TB association have been reported by several case-control cross-sectional studies [2]. Prasad The most important cohort study on this matter was conducted in India from 1991 to 2003, which presented a strong evidence of this association [8].

The most important cohort study on this matter was conducted in India from 1991 to 2003, which presented a strong evidence of this association [8]. Nearly 17% of smokers of the world live in India. [9, 10] Recent household surveys from India have shown that more than one third of men and a few percent of women who smoke tobacco are in the middle age group. [11, 12] It has been consistently shown from various disease surveys in India that the prevalence of

pulmonary tuberculosis among males aged ≥ 15 years is [2-4] times higher than in females of the same age; [13] so it might be possible that there is an association between tobacco smoking and the higher rate of tuberculosis in adolescent males. Smoking kills over half a million women each year and is the most important preventable cause of female premature death in several developed countries. [14]

Effects of Smoking on Women's Health (<https://www.indushealthplus.com/smoking-effects-on-womens-health.html>) [15]

India has around 12.1 million female smokers. The causes of smoking in women are numerous. Increased stress, so-called metro culture and many more reasons why Indian women smoke. The smoking effects on health are terrifying and it has destroyed many lives.

Harmful effects of Smoking on Women's Health [15]

- 1. Decreased bone density:** It is a critical thing for the women who smoke and have gone through menopause. These women have lower bone density than the women who don't smoke. They have higher chances of getting hip fracture than rest of the women.
- 2. Rheumatoid Arthritis:** Rheumatoid arthritis is a chronic disease which causes painful inflammation of the joints. The women who smoke have higher chances of getting rheumatoid arthritis than who don't.
- 3. Gum problems:** Smoking will lead to gum diseases that will ultimately result in bone and tooth issues.
- 4. Cataracts:** Women who smoke are more prone to cataracts: an eye disease characterized by the foggy lens.
- 5. Pregnancy issues:** The women who smoke have a problem in getting pregnant. Smoking during pregnancy creates higher chances of miscarriage.

6. **Ulcer issues:** Similar to gum diseases, smoking can also cause ulcers in the stomach which can lead to death.
7. **Depression:** It is found that women who smoke are more likely to go into depression than men.
8. **Menopause:** The women who smoke are likely to suffer menopause at a younger age with worse symptoms.
9. **Menstrual problems:** The women who smoke are found to have menstrual problems like irregular or painful periods.
10. **Breathing issues:** Smoking leads to lung diseases and the women who smoke are likely to suffer the breathing problems.

Objective

This case study follows the medical trajectory of a young, unmarried woman living alone in a bustling metropolis. Initially presenting symptoms of respiratory distress, she was diagnosed with pneumonia and commenced treatment. Upon further investigation, irregularities in her chest X-ray led to an HRCT scan and Sputum GenXpert analysis. The HRCT revealed multiple cavities with fibrosis, highly suggestive of TB, which was confirmed through GenXpert testing. The patient's journey highlights the complexity of diagnosing and treating tuberculosis in urban settings and underscores the importance of thorough diagnostic procedures in the pursuit of effective treatment and recovery.

Case Study

The case of a young unmarried working female chain smoker living alone in a metro city who developed respiratory symptoms and was diagnosed with pneumonia raises concerns about her overall health and well-being. Living away from home and being a chain smoker might have contributed to her susceptibility to respiratory issues. Initially, she sought medical attention at a big hospital, where she was diagnosed with pneumonia and received treatment for a month. However, her condition didn't improve as expected. Upon revisiting the hospital and undergoing a chest X-ray (PA view), irregular opacities were observed in the left mid and lower lung zones. These findings prompted further investigation, leading to a high-resolution computed tomography (HRCT) scan of her chest. The HRCT chest scan revealed a more complex situation, with multiple cavities and fibrosis present in the lungs. These radiological findings were highly suggestive of tuberculosis (TB), a potentially serious and contagious bacterial infection that primarily affects the lungs. To confirm the diagnosis, a sputum GenXpert test was performed, which detected a high level of *Mycobacterium tuberculosis* and indicated sensitivity to Rifampicin, an essential drug in the treatment of TB. Given the confirmed diagnosis of TB with Rifampicin-sensitive *Mycobacterium tuberculosis*, the patient was started on anti-tuberculosis treatment (ATT). It's important to note that TB treatment involves a combination of

antibiotics taken over an extended period to ensure the eradication of the bacteria and prevent the development of drug resistance.

This case highlights the intricate interplay between lifestyle factors (such as smoking), living conditions (being away from home), and susceptibility to infections. The prompt diagnosis of TB and initiation of appropriate treatment are crucial not only for the patient's recovery but also for preventing the spread of the disease to others. In addition to medical treatment, the patient may benefit from support to quit smoking and make positive lifestyle changes to improve her overall health outcomes. Regular monitoring, compliance with medication, and follow-up care will be essential components of her journey toward recovery.

Discussion

This case study highlights several significant aspects of healthcare and social challenges. Firstly, the young working woman's situation reflects the prevalent issue of individuals prioritizing work and familial responsibilities over personal health, which can lead to delayed diagnosis and treatment. Living alone in a metro city, she is also exposed to potential isolation and lack of support during her illness.

Secondly, the discrimination and stigma surrounding TB in society and the workplace can exacerbate the young woman's stress and isolation. Despite advances in medical knowledge, misconceptions about TB persist, affecting her mental and emotional well-being. This underscores the need for awareness campaigns and education to dispel myths about the disease.

Thirdly, the case exposes the limitations of corporate hospitals' busy schedules in diagnosing TB in its early stages. Prompt detection could improve prognosis, emphasizing the importance of effective healthcare infrastructure and timely diagnosis in achieving favorable outcomes.

Lastly, the case underscores the necessity of proactive measures, such as regular screenings for vulnerable and high-risk populations, to detect TB at an early stage. Early detection not only benefits the individual but also prevents further transmission, reinforcing the importance of community-based healthcare initiatives.

In conclusion, this case study illustrates the complex interplay of health, social stigma, healthcare access, and the importance of early detection in managing TB. It emphasizes the need for a comprehensive approach that includes awareness, education, accessible healthcare, and community involvement to address these challenges effectively.

Conclusion

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Social stigma and discrimination associated with TB

This case highlights the importance of prioritizing health and seeking medical attention, even for individuals living a busy urban life. It also emphasizes the need for awareness about the risks associated with habits like chain smoking, which can exacerbate health issues. The diagnosis of TB underscores the necessity of addressing this disease without stigmatization or discrimination. Let's work together to create a supportive environment where everyone can access proper healthcare and information, without fear of judgment or isolation, both in the workplace and the community.

Summary

In this case study, a young unmarried working female, residing alone in a bustling metropolitan city, and maintaining a habit of chain smoking, experienced concerning respiratory symptoms. These symptoms prompted her to seek medical attention at a prominent hospital. Following a thorough examination, she was diagnosed with pneumonia and subsequently commenced a month-long treatment regimen.

Upon revisiting the hospital for a follow-up, the patient's condition warranted a chest X-ray in the posterior-anterior view. The X-ray revealed an irregular opacity in the left mid and lower zones of her chest. As a result, medical professionals recommended conducting a High-Resolution Computed Tomography (HRCT) scan of her chest, as well as a Sputum GenXpert analysis.

The HRCT chest scan unveiled the presence of multiple cavities along with fibrosis, significantly indicative of tuberculosis (TB) infection. Subsequent to this finding, the Sputum GenXpert test was administered, which conclusively detected a high level of Mycobacterium tuberculosis, the bacteria responsible for causing TB.

Furthermore, the detected strain was found to be sensitive to the antibiotic Rifampicin.

As a direct response to these findings, the patient was promptly initiated on Anti tuberculosis Treatment (ATT), marking the commencement of a comprehensive therapeutic approach to address her tuberculosis. This case highlights the importance of early and accurate diagnosis, especially in the context of complex cases, such as a young working female living independently in an urban environment, with underlying risk factors like smoking. Effective management and treatment protocols have been enacted to counteract the progression of the disease and promote the patient's recovery and overall well-being.

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