INTERNATIONAL JOURNAL OF HEALTH & MEDICAL RESEARCH

ISSN(print): 2833-213X, ISSN(online): 2833-2148

Volume 05 Issue 05 May 2026

DOI : 10.58806/ijhmr.2026.v5i5n15

Page No. 434-441

Probable Reactivation of Latent Pulmonary Tuberculosis in A Patient Undergoing Laryngeal Cancer Treatment

Dahilo Enoch Auta[1*], Adeyi Moses Ojonugwa[2], Akolo Yohanna Jaggu[3], Akor Blessing Oganya[4], Esther Agmadalo Malachi Cegbeyi[5], Maimuna Bashir Tukur[6], Mustapha Jamda Abubakar[7]

[1,2]Department of Otorhinolaryngology, University of Abuja Teaching Hospital, Gwagwalada Abuja, Nigeria.

[1]Department Of Otorhinolaryngology, University of Abuja, Nigeria

[3,5,6,7]Department of Community Medicine, University of Abuja Teaching Hospital, Gwagwalada Abuja, Nigeria.

[7]Department of Community Medicine, University of Abuja, Abuja Nigeria

[4]Department of Family Medicine, University of Abuja Teaching Hospital, Gwagwalada Abuja, Nigeria

[1]ORCID: 0000-0002-6084-3777

[2]ORCID: 0009-0008-1745-3141

[3]ORCID: 0000-0003-0122-1078

[4]ORCID: 0000-0002-3806-972x

[5]ORCID: 0009-0003-2051-0163

[6]ORCID: 0009-0009-8152-5274

[7]ORCID: 0000-0002-6066-8526

ABSTRACT

Background: Tuberculosis (TB) is a highly infectious airborne disease that could develop / be reactivated in a patient with malignancy as an opportunistic infection due to immunosuppression from the malignancy. Thus, tuberculosis should be ruled out in such high-risk conditions in TB–endemic regions such as Nigeria. Immunosuppression either due to cancer or cancer chemotherapy, poses tuberculosis diagnostic and management challenges with atypical clinical presentation, high chance of false-negative results and subsequent delayed diagnosis due to reduction of the sensitivity of molecular diagnostic tests. A high sense of suspicion and repeated or periodic testing is thus needed for prompt diagnosis.

Similarly, laryngeal tuberculosis may be considered a differential diagnosis for laryngeal cancer because both conditions can present with similar clinical features such as hoarseness, weight loss, dysphagia, and chronic cough.

Case Presentation: A 59-year-old man diagnosed with stage IV laryngeal cancer who had an over 30 years history of tobacco smoking. Initial presentations were progressive hoarseness, dysphagia, suppurating anterior neck swelling but later developed breathlessness which was relieved by tracheostomy. Baseline chest radiography and initial GeneXpert MTB/RIF testing showed no evidence of tuberculosis, and a report of the histology of the neck mass confirmed the mass to be a well differentiated squamous cell carcinoma of the larynx. Following the confirmation from the cell histology; he was commenced on chemotherapy (Cisplatin, Docetaxel and 5- Fluorouracil regimen) and then discharged with retained tracheostomy. Two weeks after the second course of chemotherapy, he developed worsening respiratory symptoms — haemoptysis, copious trachea secretion, fever and progressive weight loss. Repeat chest imaging revealed cavitary lung disease, and GeneXpert testing of tracheostomy secretion confirmed pulmonary tuberculosis. Anti-tuberculosis therapy was initiated, and early clinical improvements were noted leading to subsequent discharge to recommence chemotherapy after completing the intensive phase of anti-tuberculosis medications.

Conclusion This case highlights the increased possibility of missing TB diagnosis in cancer patients, thus the need to always rule it out is strongly advocated. The limitation of a single negative GeneXpert result in immunocompromised patients, underscores the importance of repeat testing and radiological reassessment when clinical suspicion persists.

Key Clinical Message In TB-endemic settings, pulmonary tuberculosis should remain a key differential diagnosis in oncology patients with persistent or evolving respiratory symptoms. A single negative GeneXpert test alone, without using other diagnostic indices should not be enough to exclude TB in immunocompromised individuals and repeat testing using appropriate respiratory samples may be lifesaving.

Probable Reactivation of Latent Pulmonary Tuberculosis in A Patient Undergoing Laryngeal Cancer Treatment

INTRODUCTION

Tuberculosis (TB) is a highly infectious airborne disease which remain a major cause of morbidity and mortality globally, with a disproportionate burden in low- and middle-income countries, including sub-Saharan Africa.[1,2] Tuberculosis contributes to significant morbidity, mortality, and socioeconomic burden, particularly in low- and middle-income countries where health systems are often constrained. Despite advances in diagnostics and treatment, management of TB in populations with impaired immunity continues to pose significant challenges due to the derangement and changes in the clinical features and the main investigations – Mantoux test, Chest X-Ray, and even GeneXpert. The changes in the response elicited from investigations result from factors that affect the immune response for example from malnutrition, cancer and use of immunosuppressive medicines such as for organ transplant or cancer treatment. Also, patients with malignancy are at an increased risk of developing active TB due to cancer-related immune dysregulation, malnutrition, and the immunosuppressive effects of chemotherapy, which may lead to reactivation of latent infection or increased susceptibility to new infection.[2,3.]

Head and neck cancer is the second most common cancer associated with developing active tuberculosis, after haematological malignancies.[4] Tuberculosis either latent or active, pulmonary or extra pulmonary present an array of diagnostic and management challenges in head and neck cancer.[4] These include atypical and overlapping constitutional symptoms which may conceal the clinical presentation of TB potentially delaying diagnosis. Atypical radiologic manifestation of TB in immune compromised patients as these are greatly influenced by host immunity. In addition, the bacteria load found in the sputum of immune compromised patients is significantly low, which may also alter the host response to TB diagnostic test and increase the chance of false negative results. Finally, the chance that TB treatment may interact with chemotherapeutic agent is also of great concern.[4]

The GeneXpert MTB/RIF assay is a widely recommended rapid molecular diagnostic tool for tuberculosis, it offers simultaneous detection of Mycobacterium tuberculosis and rifampicin resistance.[5] Although the assay demonstrates high specificity, its sensitivity may be reduced in patients with low bacillary loads, extrapulmonary disease, or impaired immune responses, resulting in false-negative results.[5] Given the complexity of the condition in immune compromised patient either due to malignancy or treatment with chemotherapy, such high-risk clinical settings will require, repeated testing and sustained clinical suspicion to avoid missed or delayed diagnoses.

CASE PRESENTATION

A 59-year-old man, who presented on September 17, 2025, at the ENT clinic of University of Abuja Teaching Hospital with a nine (9) months history of intermittent hoarseness, odynophagia, left otalgia, feeling of foreign body sensation in his throat and one (1) month history of anterior neck swelling which suppurated spontaneously discharging purulent fluid.

The patient had a history of 30 years of 30-pack years smoking of cigarettes, but no history of alcohol consumption, contact with any chronic coughing individual, comorbid conditions and no family history of head or neck cancer.

Three (3) weeks after the first presentation, hoarseness became persistent, with progressive breathlessness necessitating admission through the accident and emergency unit with subsequent emergency laryngoscopy, biopsy and tracheostomy to relieve upper airway obstruction.

Diagnostic evaluation at presentation includes a video laryngoscopy which showed an irregular soft tissue swelling on the left supra glottis distorting the anatomy of the arytenoid and ventricular fold, obscuring the vocal cord on the ipsilateral side with fixity and loss of mobility (Fig. 1). The contralateral vocal cord could barely be seen with minimal mobility and incomplete apposition of the cords.

Figure 1: Laryngoscopy of the glottis.

The computer tomography scan of the neck showed an iso-dense shadow obscuring the larynx, another hyperdense extra laryngeal shadow was seen on the right side extending into the supra clavicular area (Fig. 2). Histology showed invasive well differentiated squamous cell carcinoma, with no feature of any granulomatous lesion (Fig. 3). Other supportive investigations at presentation were HIV screening – negative, Mantoux test – 10mm not diagnostic, Gene Xpert MTB/RIF test – negative (Fig. 4) and chest x – ray which was not remarkable.

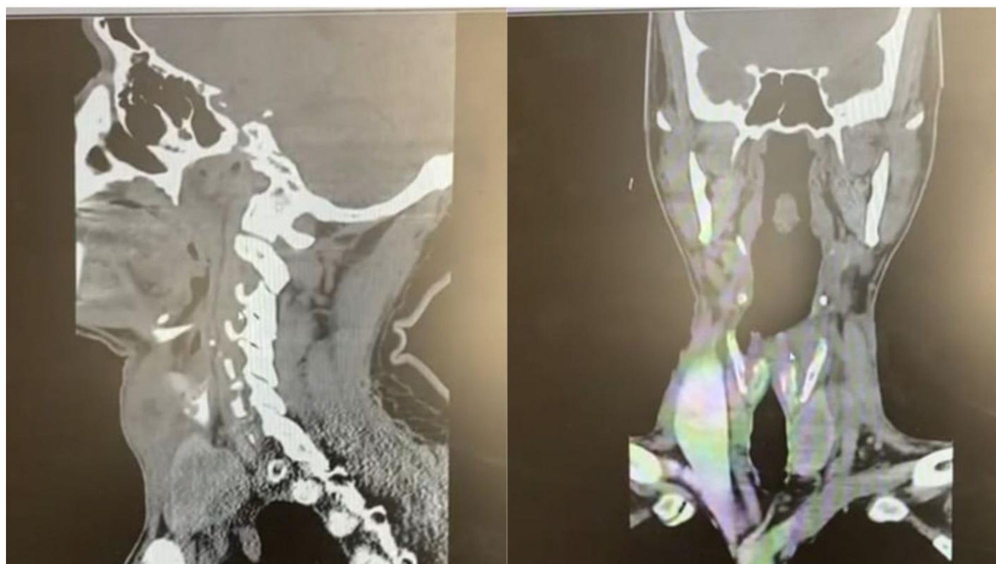
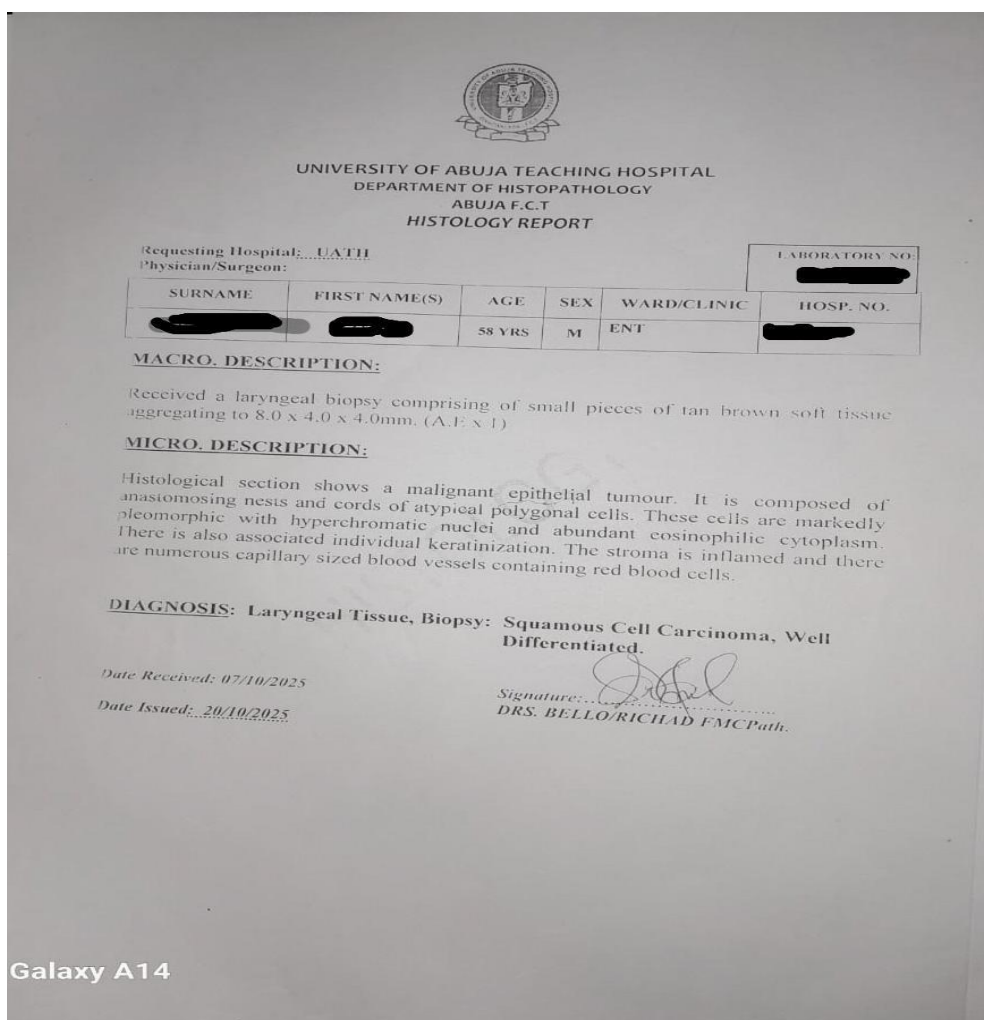


Figure 2: Computer tomography scan of the neck



UNIVERSITY OF ABUJA TEACHING HOSPITAL
DEPARTMENT OF HISTOPATHOLOGY
ABUJA F.C.T
HISTOLOGY REPORT

Requesting Hospital: UATH
Physician/Surgeon:

LABORATORY NO: [redacted]

SURNAME	FIRST NAME(S)	AGE	SEX	WARD/CLINIC	HOSP. NO.
[redacted]	[redacted]	58 YRS	M	ENT	[redacted]

MACRO. DESCRIPTION:

Received a laryngeal biopsy comprising of small pieces of tan brown soft tissue aggregating to 8.0 x 4.0 x 4.0mm. (A.E x 1)

MICRO. DESCRIPTION:

Histological section shows a malignant epithelial tumour. It is composed of anastomosing nests and cords of atypical polygonal cells. These cells are markedly pleomorphic with hyperchromatic nuclei and abundant eosinophilic cytoplasm. There is also associated individual keratinization. The stroma is inflamed and there are numerous capillary sized blood vessels containing red blood cells.

DIAGNOSIS: Laryngeal Tissue, Biopsy: Squamous Cell Carcinoma, Well Differentiated.

Date Received: 07/10/2025

Date Issued: 20/10/2025

Signature: ....
DRS. BELLO/RICHAD FMCPath.

Galaxy A14

Figure 3: Histology Report of laryngeal biopsy done on 7th October 2025

Figure 4: Gene Xpert MTB/RIF test Results.

The patient was counselled for total laryngectomy, however opted for chemo radiation therapy in another facility which he was referred to and was started on Cisplatin, Docetaxel and 5- Fluorouracil. He received the first dose eight (8) weeks after referral and the second dose was given 3 weeks later.

Two (2) weeks after the second course of chemotherapy he developed worsening cough, breathlessness, chest pain, haemoptysis, progressive weight loss, fever, anorexia, asthenia, oral sores, loss of hair and bilateral leg swelling, and copious offensive rusted brown mucus discharge from the tracheostomy which necessitated his re-admission to our facility. A complete blood count test revealed anaemia, leucocytosis and thrombocytopenia. The liver and kidney function test were deranged, and a repeat chest x ray demonstrated a thick–walled cavitary lesion on the left upper and mid lung zones with surrounding inhomogeneous and reticular opacities, silhouetting of the ipsilateral cardiac margin and possible mediastinal lymphadenopathy which were highly suggestive of pulmonary tuberculosis (Fig. 5).

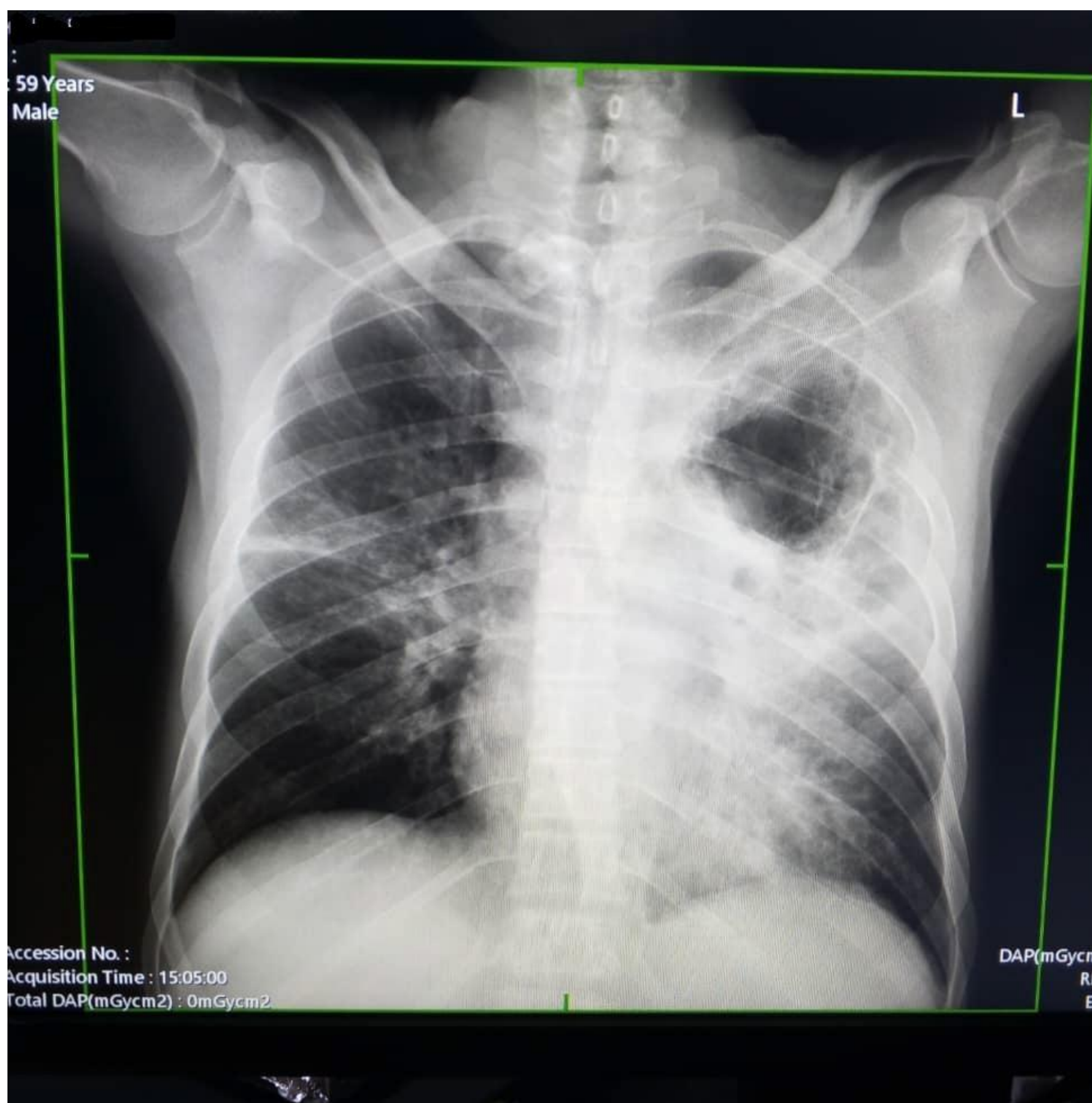


Figure 5: Repeat Chest X-ray

In view of the new radiological findings coupled with the deteriorating clinical state and hematologic parameters, a repeat GeneXpert MTB/RIF testing was performed using mucus secretion from the tracheostomy tube which tested positive for mycobacterium tuberculosis (Fig. 6).

Figure 6: Repeat GeneXpert MTB/RIF test results.

The patient was promptly started on a first line anti-tuberculosis regimen consisting of Rifampicin, Isoniazid, Ethambutol and Pyrazinamide, anaemia was corrected and sepsis controlled with antibiotics. While on treatment, he demonstrated remarkable improvements both in clinical symptoms and haematologic parameters leading to his discharge and plan to continue the next course of his chemotherapy after the intensive phase of anti-Koch's therapy.

DISCUSSION

The coexistence of tuberculosis (TB) and malignancy presents a significant diagnostic and therapeutic challenge, particularly in low- and middle-income countries where both conditions remain highly prevalent.[1] Patients with cancer are known to have an increased risk of developing active TB due to cancer-related immune dysregulation, malnutrition, and the immunosuppressive effects of chemotherapy, which may lead to reactivation of latent infection or increased susceptibility to new infection.[2,6]

In patients with head and neck cancers, the diagnosis of TB may be further delayed because clinical features such as weight loss, hoarseness, cough, breathlessness, neck swellings, and constitutional symptoms often overlap with those of malignancy or are attributed to tumour progression (metastasis) or treatment-related adverse effects. This reduces clinical suspicion and delays appropriate investigations.[7]

This case highlights the limitations of relying on a single negative GeneXpert MTB/RIF result in high-risk patients. Although GeneXpert is widely recommended as a first-line diagnostic tool for TB because of its rapid turnaround time and high specificity, its sensitivity may be reduced in patients with low bacillary load, extrapulmonary disease, or impaired immune responses.[8] Chemotherapy-induced immunosuppression may further reduce mycobacterial burden in respiratory secretions, increasing the likelihood of false-negative results.[9]

The subsequent positive GeneXpert result obtained on repeat testing underscores the importance of reassessment when clinical suspicion persists. Repeat testing has been shown to improve diagnostic yield in selected high-risk populations, particularly in patients with malignancy or ongoing immunosuppression.[10] Changes in disease burden, specimen quality, and sampling timing may significantly influence test performance, supporting the role of repeat microbiological evaluation in such cases.

Another important consideration is the bidirectional relationship between tuberculosis and cancer. Chronic inflammation associated with TB has been implicated in carcinogenesis, while malignancy and its treatment may facilitate TB reactivation.[11] Although a causal relationship cannot be inferred from a single case, the coexistence of advanced laryngeal carcinoma and pulmonary TB in this patient highlights the need for heightened vigilance in endemic settings.

Delayed diagnosis of TB in oncology patients may lead to adverse clinical outcomes, increased risk of transmission, and interruption of cancer therapy. Early identification and prompt initiation of anti-tuberculous treatment are therefore essential to optimize both infectious and oncologic outcomes. This case reinforces the need to maintain TB as an important differential diagnosis in patients with head and neck malignancies, even after an initial negative GeneXpert result.

CONCLUSION

Pulmonary tuberculosis may coexist with head and neck malignancies and remain undiagnosed after initial negative molecular testing. In immunocompromised patients, repeat microbiological testing and radiological reassessment are essential to ensure prompt diagnosis and initiation of appropriate therapy.

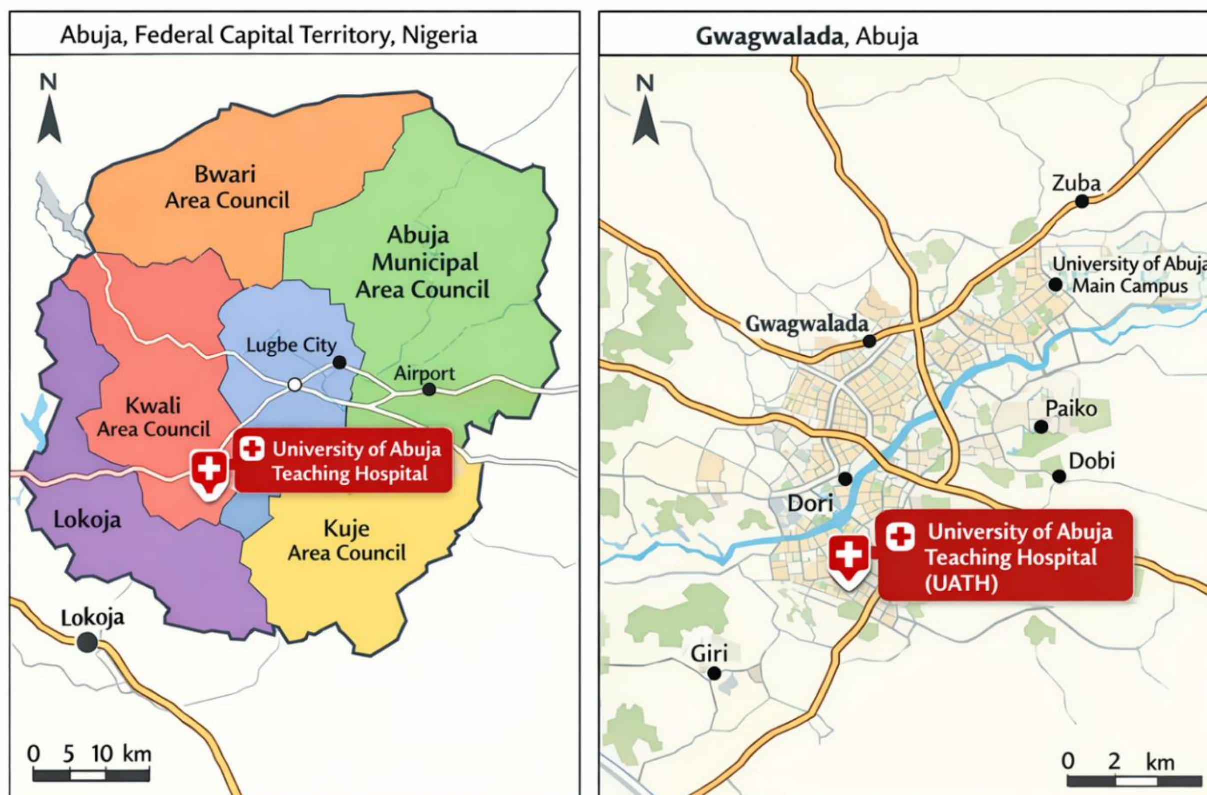
Patient Perspective

The patient was informed about the coexistence of tuberculosis and cancer and consented to further investigations and treatment. He expressed relief following confirmation of the diagnosis and initiation of anti-tuberculosis therapy.

Ethical Approval and Consent

Written informed consent was obtained from the patient for publication of this case report. Institutional ethical approval was obtained from the ethical review committee board of University of Abuja Teaching Hospital. (Approval Number: UATH/HREC/PR/2026/03/902). This case was conducted in accordance with the ethical principles outlined in the World Medical Association's Declaration of Helsinki for research involving human participants.

Study Area



REFERENCES

1) Global Tuberculosis Report 2023 [Internet]. [cited 2026 Jan 25]. Available from: https://www.who.int/teams/global-programme-on-tuberculosis-and-lung-health/tb-reports/global-tuberculosis-report-2023
2) Onal CO, Kibaroglu E, Pulmonary tuberculosis caused by Immunosuppressive Treatment. Journal of Clinical Case Reports. 2014, 4:7
3) Ho LJ, Yang HY, Chung CH, Chang WC, Yang S Sen, Sun CA, et al. Increased risk of secondary lung cancer in patients with tuberculosis: A nationwide, population-based cohort study. PLoS One [Internet]. 2021 May 1 [cited 2026 Jan 25];16(5): e0250531. Available from: ht13. Onal CO, Kibaroglu E, Pulmonary tuberculosis caused by Immunosuppressive Treatment. Journal of Clinical Case Reports. 2014, 4:7tps://pmc.ncbi.nlm.nih.gov/articles/PMC8104424/

4) Mioko M. Development of active tuberculosis during treatment of head and neck Carcinoma: a case series. Journal of medical case reports. 2019, 13: 16
5) Dobler CC, Cheung K, Nguyen J, Martin A. Risk of tuberculosis in patients with solid cancers and haematological malignancies: a systematic review and meta-analysis. Eur Respir J [Internet]. 2017 Aug 1 [cited 2026 Jan 25];50(2). Available from: https://pubmed.ncbi.nlm.nih.gov/28838977/
6) World Health Organization. WHO consolidated guidelines on tuberculosis. Module 3: diagnosis – rapid diagnostics for tuberculosis detection. World Health Organization [Internet]. 2024 [cited 2026 Jan 25];1–184. Available from: https://www.who.int/publications/i/item/9789240089488
7) Horne DJ, Kohli M, Zifodya JS, Schiller I, Dendukuri N, Tollefson D, et al. Xpert MTB/RIF and Xpert MTB/RIF Ultra for pulmonary tuberculosis and rifampicin resistance in adults. Cochrane Database Syst Rev [Internet]. 2019 Jun 7 [cited 2026 Jan 25];6(6). Available from: https://pubmed.ncbi.nlm.nih.gov/31173647/
8) Dobler CC, Cheung K, Nguyen J, Martin A. Risk of tuberculosis in patients with solid cancers and haematological malignancies: a systematic review and meta-analysis. Eur Respir J [Internet]. 2017 Aug 1 [cited 2026 Jan 25];50(2). Available from: https://pubmed.ncbi.nlm.nih.gov/28838977/
9) Yashveer JK, Kirti YK. Presentations and Challenges in Tuberculosis of Head and Neck Region. Indian Journal of Otolaryngology and Head & Neck Surgery [Internet]. 2015 Sep 1 [cited 2026 Jan 25];68(3):270. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC4961639/
10) World Health Organization. WHO consolidated guidelines on tuberculosis. Module 3: diagnosis – rapid diagnostics for tuberculosis detection. World Health Organization [Internet]. 2024 [cited 2026 Jan 25];1–184. Available from: https://www.who.int/publications/i/item/9789240089488
11) Lawn SD, Nicol MP. Xpert® MTB/RIF assay: Development, evaluation and implementation of a new rapid molecular diagnostic for tuberculosis and rifampicin resistance. Future Microbiol. 2011 Sep;6(9):1067–82.
12) Zifodya JS, Kreniske JS, Schiller I, Kohli M, Dendukuri N, Schumacher SG, et al. Xpert Ultra versus Xpert MTB/RIF for pulmonary tuberculosis and rifampicin resistance in adults with presumptive pulmonary tuberculosis. Cochrane Database Syst Rev [Internet]. 2021 Feb 22 [cited 2026 Jan 25];2(2). Available from: https://pubmed.ncbi.nlm.nih.gov/33616229/
13) Roy D, Ehtesham NZ, Hasnain SE. Is Mycobacterium tuberculosis carcinogenic to humans? FASEB Journal [Internet]. 2021 Sep 1 [cited 2026 Jan 25];35(9): e21853. Available from: /doi/pdf/10.1096/fj.202001581R