# Successful Treatment of Cerebral Tuberculoma and Tuberculous Lymphadenitis in an HIV/AIDS Patient: A Case Report

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## Abstract

Tuberculosis is one opportunistic infection that may occur in HIV/AIDS patients. Its clinical presentation may depend on infected organs. A 37-years old man complained of left limb weakness followed by mild fever, weight loss of more than 10 kgs within two months, and swelling in his left submandibular region. Laboratory tests showed mild anemia, hypoalbuminemia, and positive serology HIV test. Histopathological examination of neck swelling showed inflammation of chronic granulomatous tuberculous with acid-fast bacilli positive in Ziehl Nielsen staining. Head CT scan with contrast, showed multiple isodense lesions with rim contrast enhancement accompanied by perifocal edema. Anti-Tuberculosis Drug and Anti-Retroviral Therapy were given as a combination treatment for this patient. Clinical and radiological improvement in the patient indicated good outcome and successful treatment.

***Keywords:*** *Cerebral Tuberculoma, Tuberculosis, HIV/AID*

## Introduction

Tuberculosis (TB) is the most common opportunistic infection in HIV/AIDS patients. HIV-TB co-infection increases the frequency of extra-pulmonary TB involvement, such as respiration, digestive, lymphatic, and neurologic localization.[1] Clinical presentation of TB may depend on infected tissue.[2]

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Lymphadenopathy presents about 2-5% among all cases in Mycobacterium tuberculosis infection of lymphatic tissue, as cervical nodes are the most frequently involved.[3]

While the central nervous system (CNS) TB has been reported ten times higher in patients with HIV/AIDS infection, its mortality exceeds 50%. The focal form of CNS TB could be tuberculoma or an abscess.[4]

Due to the clinical manifestation of HIV-TB co-infection may vary and atypical with high mortality and morbidity, we present this case report emphasized in Cerebral Tuberculoma and Tuberculous Lymphadenitis in HIV/AIDS patients.

### Case Description

A 37-years old man came to the emergency department of Dr. Soetomo Hospital with complaints

of left limb weakness 1 week before admission. He also complained of decreased appetite followed by weight loss of more than 10 kgs within 2 months and mild fever.

Other complaints were swelling in his left submandibular region, 3 months before admission. The swelling was initially small then gradually increasing its size until the supraclavicular region and produced amounts of pus. The swelling had been treated by surgical procedure and the sample had been done with a histopathological examination. It is reported tuberculous lymphadenitis.

He had been given an Anti-Tuberculosis Drug (ATD) in the form of 4 tablets of Fixed Drug Combination (FDC) that consist of Rifampicin, INH, Pyrazinamide, and Ethambutol every 24 hours. However, this patient only took those medications for about 2 months as no improvement felt by the patient.

On physical examination, the blood pressure was 110/70 mmHg, pulse 105 times/ minute, respiratory rate 20 times/ minute, axillary temperature 36.5$^{o}$C, bodyweight 55 kgs. General appearance weak, anemic, oral thrush (+), Examination of neck region ulcer in the left side (5 x 8 cm), irregular, surrounded by redness, slough (+), pus (-). Neurological examination revealed GCS 456, negative meningeal sign, normal cranial nerve examination, normal reflexes with negative Babinski signs, motoric strength examination of right upper-lower limb is 5 and left upper-lower limb is 2.

**Figure 1. Ulcer appearance in**

**Left supraclavicular region**

Laboratory tests showed Hb 8.1 g/dL, MCV 82.6 fL, MCH 28 pg, MCHC 26.8 g/dL, leukocytes 6.150/mm$^3$, neutrophils 61.6%, platelets 265.000/mm$^3$, AST 16 U/L, ALT 22 U/L, albumin 2.4 g/dl, BUN 9 mg/dL, creatinine 0.7 mg/dL, sodium 140 mmol/L, Potassium 3.7 mmol/L, positive HIV serology, and negative IgG/IgM Toxoplasma.

Histopathological examination of ulcer showed inflammation of chronic granulomatous tuberculous, with acid-fast bacilli positive obtained from Ziehl Nielsen staining technique.

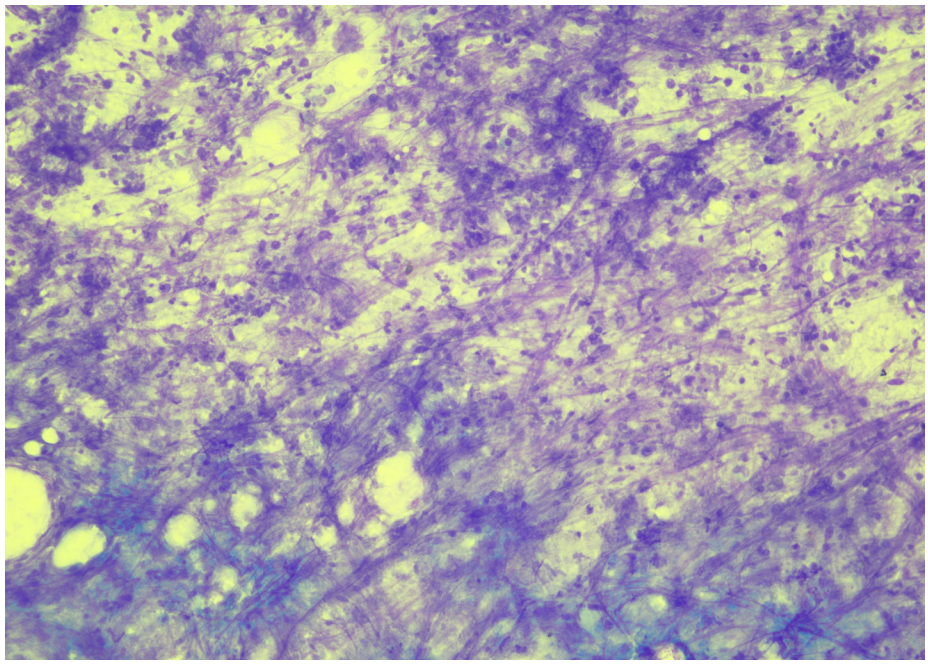

**Figure 2. Chronic granulomatous tuberculosis inflammation from histopathologic examination of neck ulcer**

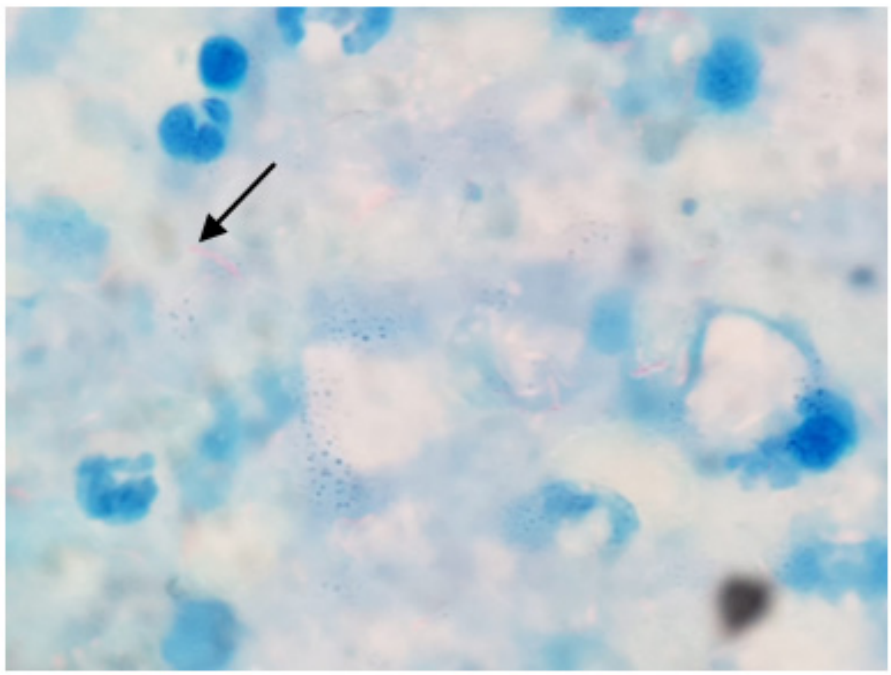

**Figure 3. Acid Fast Bacilli from**

**Ziehl Nielsen Staining**

This patient had been performed a head CT scan with contrast, it showed multiple isodense lesions with rim contrast enhancement accompanied by perifocal edema. The size approximately 1.5 x 1.5 x 1.7 cm in the posterior side of the right parietal lobe and 0.7 x 0.5 cm in the right lentiform nucleus leading to the appearance of tuberculoma.

Regarding the clinical presentation and other examination, this case is reported as HIV/AIDS and lost to follow-up (default) tuberculous lymphadenitis and cerebral tuberculoma.

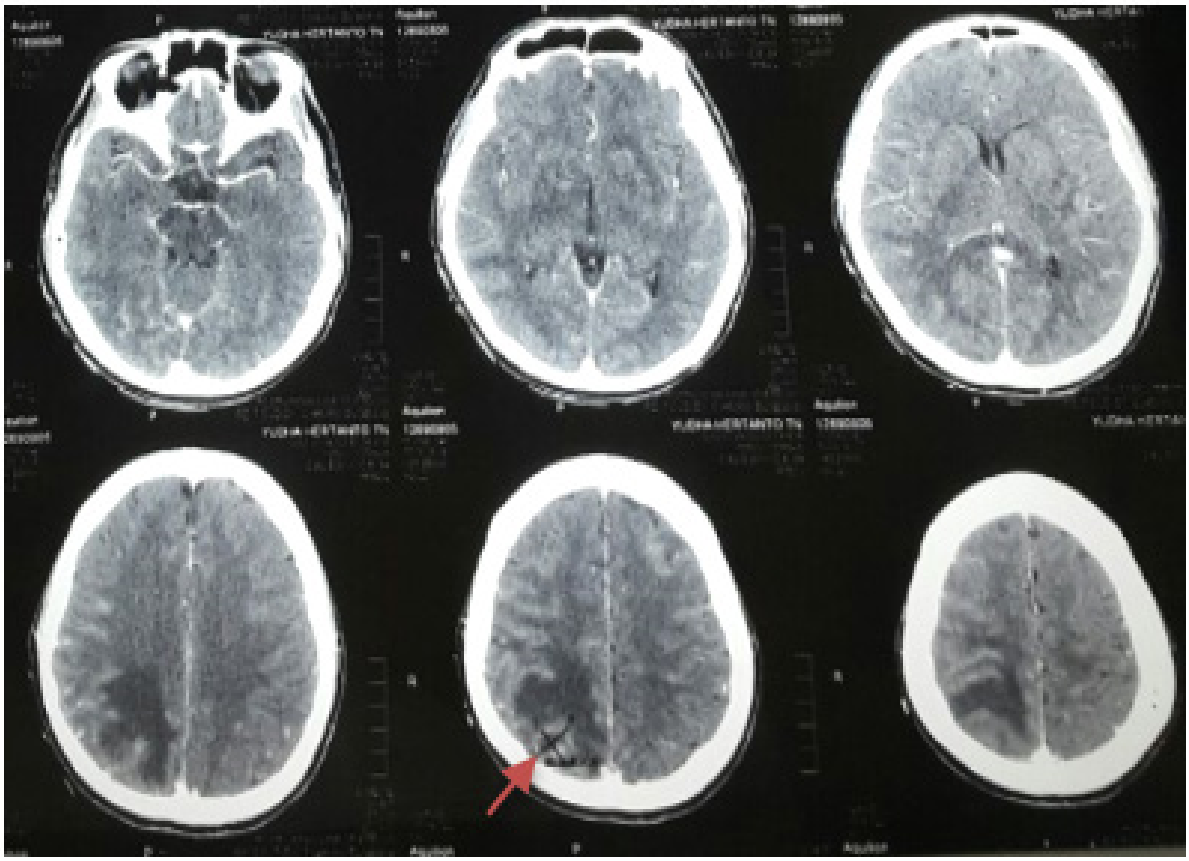

**Figure 4. Rim contrast enhancement accompanied by perifocal edema**

This patient was given Streptomycin injection 1 gram intramuscular every 24 hours for 2 months, ATD 4 Fixed Drug Combination (4FDC) (Rifampicin 150 mg, INH 75 mg, Pyrazinamide 400 mg, Ethambutol 275 mg) 4 tablets every 24 hours for 3 months, Cotrimoxazole 960 mg every 24 hours orally, done wound care three times a week, and medical rehabilitation.

The patient was started to get Anti-Retroviral Therapy (ART) in the form of FDC (Tenofovir 300 mg, Lamivudine 300 mg, Efavirenz 600 mg) fourteen-day after the first day of ATD administration. On the 30$^{th}$ day of treatment, any progress occurred to this patient: improvement of neck ulcer and left motoric strength.

**Figure 5. Neck ulcer appearance after 30th day of treatment**

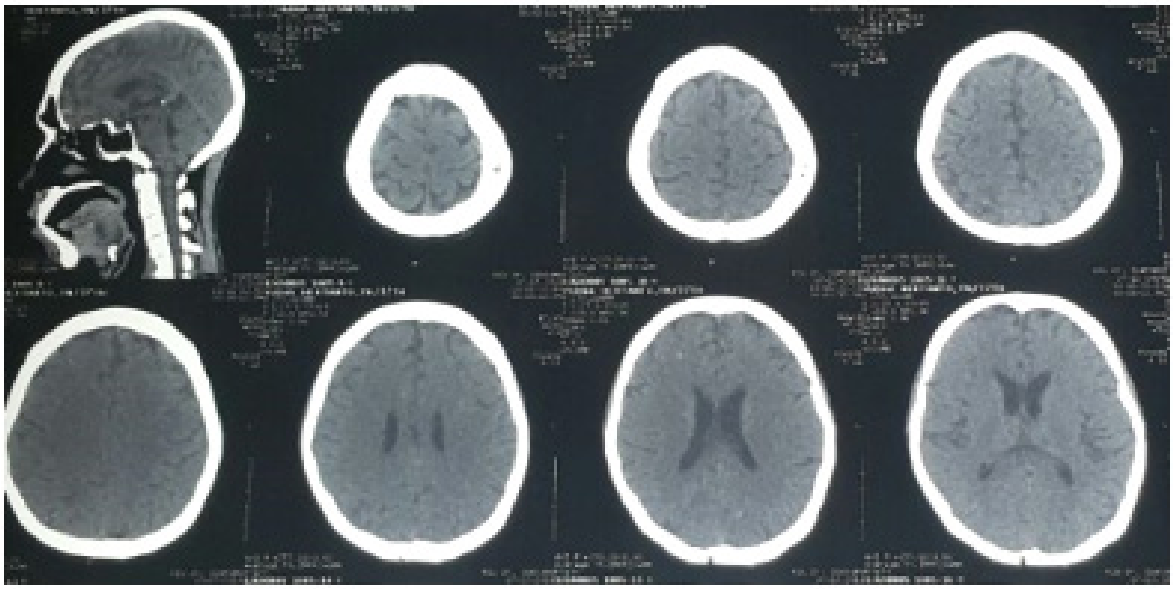

**Figure 6. Head CT-scan with contrast after treatment, no rim contrast enhancement was detected**

## Discussion

HIV-TB co-infection leads to challenges in both diagnosis and treatment. WHO recommendation regarding HIV patient was doing TB screening at the time that HIV infection is diagnosed.[5] Extra-pulmonary TB (EPTB) is associated with HIV infection. The clinical presentations may vary depending on the affected organs such as neck stiffness in TB meningitis, chest pain in pleural TB (pleurisy), enlarged superficial lymph nodes in TB lymphadenitis, and spinal deformity in TB spondylitis. Diagnosis method of extra-pulmonary TB is based on bacteriological and/or histopathological examination on affected body tissue.[6-9]

Tuberculous lymphadenitis may occur during primary tuberculous infection or as a result of reactivation of dormant foci or direct extension from a contiguous focus. Primary infection occurs on inhaled droplet nuclei which contain tubercle bacilli to pass mucociliary defenses of bronchi and lodge in terminal alveoli of the lungs. The Mycobacterium tuberculosis multiplies in the lung which is called ghon focus. The lymphatic drains the bacilli to the hilum lymph nodes, and it turns to be the primary complex. The infection may spread from primary focus to regional lymph nodes. The bacilli continue to spread via the lymphatic system or may pass through the nodes to reach the bloodstream, subsequently, it disperses to other organs in the body.[10]

This patient had performed the histopathological examination, as the result showed chronic inflammatory granulomatous tuberculous with acid-fast bacilli detected in Ziehl Nielsen staining, which indicates this lymphadenitis caused by tuberculosis infection.[2]

Another manifestation of EPTB is central nervous system involvement. The clinical spectrum of CNS tuberculosis includes meningitis, abscess, and tuberculoma. CNS involvement occurs in 10–20% of patients with AIDS-related tuberculosis, and mortality in these patients is high.[11] CNS tuberculosis are obtained by performing a CT scan examination to identify the location, rim contrast enhancement, perifocal edema, or midline shift. In case of the intracranial mass lesion within the posterior fossa of the brain, MRI should be done.[12, 13]

Appearances of the focal lesion with rim contrast enhancement, mass effect, and perifocal edema which are obtained from head CT scan of HIV/AIDS patient could be suspected either toxoplasmosis infection, cerebral tuberculoma, primary CNS lymphoma, or pyogenic brain abscess.[12-15] Rapid detection of HIV/AIDS-associated opportunistic infection in CNS is crucial to determine causative organism of CNS lesion. This patient has a history of tuberculosis, which is confirmed by examining a lymphadenitis sample. Thus, clinical presentations tend to cerebral tuberculoma.[15]

Treatment for EPTB does not differ significantly between patients with or without HIV/AIDS infection. However, the ATD regimen should be given 2-4 weeks before ART.[13] In this case, we determine this type of patient is the default (lost to follow-up) case because this patient had been given tuberculosis standard treatment for about 1-2 months yet later on lost to follow up.[2, 7-9]

ATD regimen is prescribed to this patient. It began with 1 gram of Streptomycin injection via intramuscular daily for a month, 4 Fixed Drugs Combination (150 mg of Rifampicin, 75 mg of INH, 400 mg of Pyrazinamide, 275 mg of Ethambutol) 4 tablets every 24 hours. This regimen should be completed for 12 months.[2]

First-line ART followed the ATD regimen after 2 weeks of EPTB treatment. Efavirenz is one of the NNRTI (Non-Nucleoside Reverse-Transcriptase Inhibitor) groups which is recommended since it has mild interaction with Rifampicin compared to Nevirapine. Fixed Drugs Combination ART which available in Indonesia are 300 mg of Tenofovir, 300 mg of Lamivudine, 600 mg of Efavirenz, these FDCs are commonly used as first-line ART in Indonesia.[7-9]

The outcome of combination treatment between ART and ATD in this patient has remarkably favorable. Another case report of HIV-TB coinfection who received this combination also shows good response to ART and ATD.[16] Cerebral tuberculoma of this patient has completely vanished during treatment.

## Conclusion

Concurrent infection of HIV/AIDS and TB is a notable consideration for HIV patient management. This case report demonstrates a good outcome of ART and ATD combination therapy for cerebral tuberculoma and tuberculous lymphadenitis in HIV/AIDS patients. The diagnostic procedure also plays an important role to be performed in HIV/AIDS patients. Overall, the clinician should understand the knowledge of opportunistic infection in HIV/AIDS patients properly, so that mortality and morbidity could be declined substantially.

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**Ethical Clearance**: Not required for a case report.

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