

Encephalitis associated with cervical lymph nodes tuberculosis in a patient with human immunodeficiency virus infection: A case report

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Abstract

The risk of extrapulmonary tuberculosis increases in patients with human immunodeficiency virus (HIV) infections. Encephalitis is a rare form of extrapulmonary tuberculosis infection. We report a case of encephalitis associated with cervical lymph nodes tuberculosis in a patient with human immunodeficiency virus (HIV) infections.

Encephalitis associated with cervical lymph nodes tuberculosis in a patient with human immunodeficiency virus infection: A case report

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Key Clinical Message

The risk of extrapulmonary tuberculosis increases in patients with human immunodeficiency virus (HIV) infections. Encephalitis is a rare form of extrapulmonary tuberculosis infection. We report a case of encephalitis associated with cervical lymph nodes tuberculosis in a patient with human immunodeficiency virus (HIV) infections.

Keywords

Encephalitis, Cervical lymph nodes tuberculosis, Human immunodeficiency virus infection

Introduction

From 2003 to 2014, 27 countries of the EU/EEA have reported that 83% of tuberculosis patients had pulmonary infection only and 17% of tuberculosis patients had extrapulmonary infections¹. The risk of extrapulmonary tuberculosis increases higher compared with pulmonary tuberculosis in patients with HIV². It is estimated a total of 208,000 deaths from tuberculosis among HIV-positive individuals. In 2019, Indonesia had a tuberculosis burden of 8.5%³.

The most common location of head and neck tuberculosis is cervical lymph nodes⁴. Lymph nodes tuberculosis is common in children and women. Tuberculous cervical lymphadenitis is often found along with the increasing incidence of HIV infection⁵.

Neurological involvement is reported in 3% of extrapulmonary tuberculosis infections¹. Central nervous system tuberculosis usually appears as tuberculous meningitis, tuberculous brain abscess, or intracranial tuberculoma⁶. Its manifestation as encephalopathy is rare and reported more common in children⁷. We report a case of encephalitis associated with cervical lymph nodes tuberculosis in patients with HIV infection.

Case Report

A 50-year-old man visited the emergency unit with slurred speech, difficulty swallowing, and involuntary movements of the right upper extremity. Prior to complaints of involuntary movement of upper limb, the patient complained of vomiting due to a hot and pressure-like feeling on his throat. Then, he complained of slurred speech and difficulty swallowing. These complaints appeared an hour and a half before arriving at the hospital. All complaints disappeared as soon as he arrived at the hospital. The patient also complained of numbness of the right hand since one month before arrival. However, there were no complaints of fever, headache, or cough. The patient had a history of hospitalization 6 months before with dizziness. His next house neighbour was reported having cough for months but the cause was unknown.

Based on physical examination, the patient was found to be *compos mentis*. The patient has a temperature of 36.1°C, pulse of 112 beats/minute, respiratory rate of 22 breaths/minute, blood pressure of 149/81 mm/Hg., and oxygen saturation of 96%. The patient had a fever with a temperature of 38.0°C on the first night of hospitalization, then the temperature immediately return to normal after receiving paracetamol. He has no neck stiffness but has bilateral cervical lymphadenitis. Based on neurological examination, numbness was found in the patient's right palm. The result of cranial nerves and motor examinations were normal.

Further, computed tomography (CT) scan of the head showed a hypodense lesion in the left parietal lobe (Fig.1). The chest radiograph showed peribronchial and parenchymal infiltrates (Fig. 2). Laboratory tests showed a positive HIV antibody test. Cervical lymph node biopsy showed the presence of cheese granulomatous inflammation and positive acid-fast bacilli.

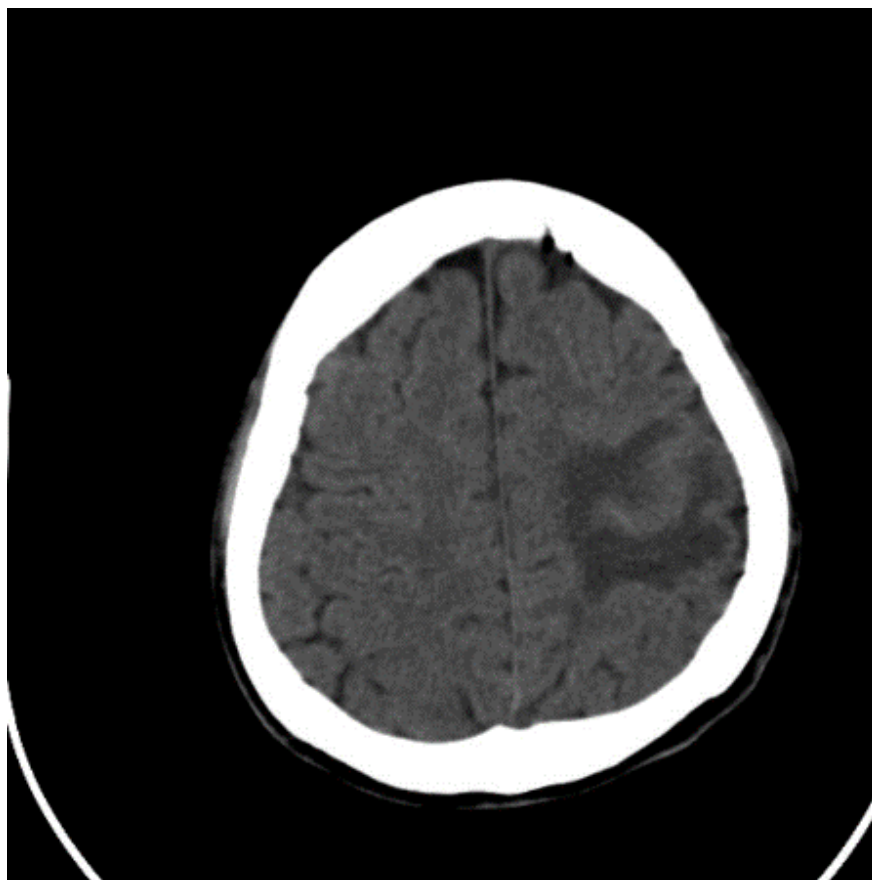


Figure 1. Hypodense lesion in left parietal lobe on CT scan

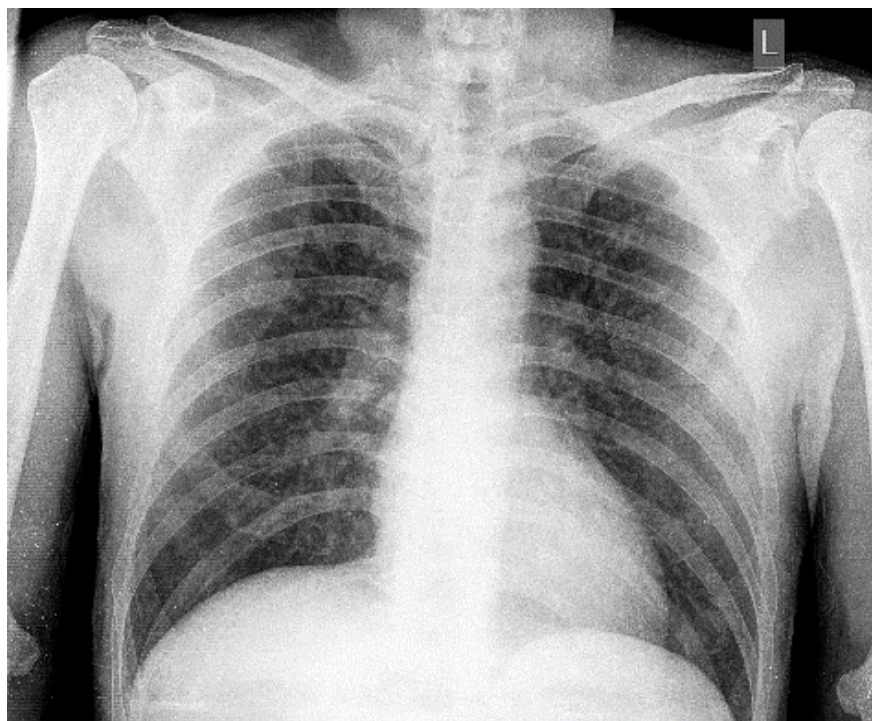


Figure 2. Peribronchial and parenchymal infiltrates on chest X-ray

The patient was given a fixed-dose combination of antituberculosis therapy consisting of isoniazid (225 mg), rifampicin (450 mg), ethambutol (825 mg), and pyrazinamide (1200 mg). The follow up showed significant improvement.

Discussion

Encephalitis is caused by inflammation of the brain parenchyma causing neurological dysfunction. The major criterion of encephalitis is an altered mental status that remains for more than 24 hours without an alternative diagnosis. Then, there are six minor criteria such as (1) fever $>38^{\circ}\text{C}$ within 72 hours before or after symptom onset, (2) new onset of focal neurologic disorder, (3) abnormality on electroencephalography consistent with encephalitis and not secondary to another etiology, (4) CSF white blood cells count $> 5 \text{ mm}^2$, (5) acute onset of neuroimaging abnormality consistent with encephalitis, (6) seizures not associated with a pre-existing seizure disorder. The presence of 2 minor criteria indicates possible encephalitis and the presence of more than 3 minor criteria indicates probable or confirmed encephalitis (if the etiologic agent is confirmed by polymerase chain reaction, serology, or brain biopsy)⁸. This case met 2 minor criteria of fever of 38°C 24 hours after symptom onset and the presence of new onset of focal neurologic disturbances of dysarthria, dysphagia, and involuntary movements.

Clinical overlap between encephalitis and encephalopathy may occur in which encephalopathy leads to a clinical condition of altered mental status that can manifest as disorientation, confusion, or other cognitive impairment, with or without evidence of brain tissue inflammation. Encephalopathy can be triggered by some toxic or metabolic conditions but sometimes occurs in response to infectious agents such as the influenza virus and *Bartonella henselae*^{9,10}.

Patients with neurotuberculosis have few specific symptoms. Delay in diagnosis must be considered, usually due to a mild initial neurologic presentation in most cases, if compared with other infectious encephalitis¹¹. Based on a report in France, only 20% of patients had a previous history of tuberculosis. Besides, only

20% of patients had respiratory symptoms¹². In this case, the patient came with a mild initial neurologic presentation and had no respiratory symptoms indicated by no history of cough.

Brain MRI is the best device for the diagnosis of encephalitis. CT scan is used only when MRI is not possible¹³. There are no specific features for encephalitis except in brain abscess or granulomatous lesions cases. A study in France revealed that CT scan and MRI scan were normal in 8 of 17 patients. It means that there is a possibility of a diagnosis of tuberculosis being ruled out in cases of normal imaging¹².

There are no conventional lymphatics in the brain, but physiological studies showed immunologically significant drainage from the brain to cervical lymph nodes. Perivascular lymphatic drainage from the central nervous system has an important role in neuroimmunological reactions on autoimmune diseases and the same mechanism also plays a role in infection of the central nervous system^{14–16}.

Specific antituberculosis therapy can be associated with the prolonged onset of action, especially in patients with severe brain damage¹⁷. The standard recommended therapy is fixed-dose combinations of 4 drugs (isoniazid, rifampicin, ethambutol, and pyrazinamide) for 6 months intensively. Sudden discontinuation of treatment is an independent risk factor for mortality in patients with central nervous system tuberculosis¹¹.

Conclusion

The HIV risk factor has to be considered in extrapulmonary tuberculosis. The physician has to observe for signs and symptoms that can be atypical of tuberculous encephalitis. Delay in the initiation of antimicrobial therapy in patients with encephalitis tuberculosis is associated with increased mortality and risk of neurological sequelae¹⁸.

Conflict of Interest

None declared.

Authorship

RTP was responsible for the initial manuscript, data processing, imaging report, and supervision. HK was involved in the manuscript's preparation and editing.

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