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Seizure as Initial Presentation of Hiv: A Case Report of Cerebral Toxoplasmosis

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ABSTRACT

This paper reports a case of a previously healthy patient who presented with a generalized tonic-clonic seizure due to cerebral edema. Investigations revealed he has Human Deficiency Virus (HIV) with cerebral toxoplasmosis and co-infected with Hepatitis C. He was immediately placed on a toxoplasmosis treatment regime which 4 weeks later shows improvement in his clinical condition and computed tomography (CT) brain imaging. He was then put on Antiretroviral therapy (ART). This case describes the management of a patient with newly diagnosed HIV with opportunistic and co-infection.

Keywords: Cerebral Toxoplasmosis; HIV; Hepatitis C; Antiretroviral Therapy

INTRODUCTION

Youths are more susceptible to infection when they participate in unsafe sexual behaviours due to a lack of proper information. Both Health Science and Non-Health Science undergrads must have a thorough understanding of HIV/AIDS. This is because knowing about HIV/AIDS can help you prepare for what will happen if you become infected with the disease (Maziz *et al.,* 2019). HIV prevalence among women increases every year. Housewives are at risk to be infected with HIV from their husbands (Dewi *et al.*, 2021). It is estimated that about 7,800 people are newly infected with HIV and 4,400 deaths per year due to the disease. Among 83% of the population diagnosed with HIV, 45% are reported to receive antiretroviral therapy (ART) treatment, while 42% of the people living with HIV have viral load suppression. The first reported cases of HIV/AIDS in Malaysia were in 1986. Recent data from 2016 showed that the current trend of HIV transmission is via sexual transmission '. HIV patients are exposed to several opportunistic infections and malignancies. Despite undergoing therapy and effective suppression of viral load, patients with persistently low CD4 counts remain at a high risk of developing opportunistic infections. Because of its pandemic proportions, the spread of HIV/AIDS is a serious public health concern worldwide. (Amin, 2017).

CASE REPORT

A 53-year-old man was brought by his son due to generalized tonic-clonic seizure, fever, and poor oral intake for three days. He was bed-bound for 2 months ago due to left-sided body weakness which he had not sought any medical treatment There was no history of falls or trauma. He had no other medical history. The patient used to take heroin when he was 18 years old. He was an intravenous drug abuser for less than 5 years and he has never been screened for any infectious disease.

On examination, he was fully conscious, and his vital signs were stable. He had left hemiplegia with upper motor neuron findings and slurred speech. He was put on Ryle's tube as he failed the swallowing test. Other systems examinations are unremarkable.

Initial CT brain (Figure 1) revealed a slight peripheral enhancing hypodense lesion in the left lentiform nucleus, with perilesional edema and a mass effect to ipsilateral lateral ventricles. Extensive white matter edema at the bilateral front parietooccipital and left temporal lobes with effacement of the adjacent sulci. Leptomeningeal enhancement was noted at the right frontal-parietal region suggestive of cerebral abscess probably due to toxoplasmosis.

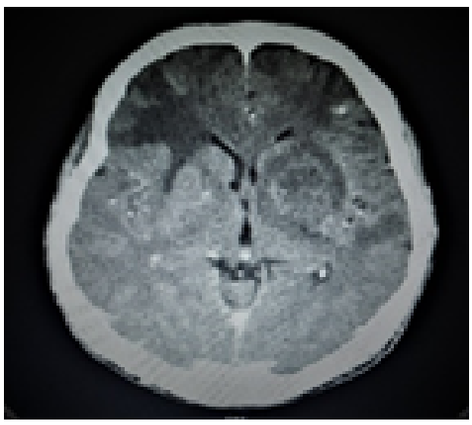

Figure 1: CT Brain on admission

Blood samples were collected for full blood count, renal function, and liver function were normal. A lumbar puncture was performed and there was hypoglycorrhachia and increased protein levels in the cerebrospinal fluid (CSF) (Table 1). These findings indicate either bacterial, fungal or tuberculosis infection. Elevated protein in the CSF, variable glucose, and white blood cell counts are common findings in cerebral toxoplasmosis. The infective screen was reactive for HIV and Hepatitis C antibodies (Table 2). His urine for drugs test were negative.

Table 1: Lumbar puncture result

	Result	**Reference range**
Opening pressure	15	10-20 cmH2O
CSF biochemistry		
Total protein	1.68 g/L	0.15-0.45 g/L
Glucose	1.9 mmol/L	2.2-3.9 mmol/L
LDH	94 U/L	
Appearance	clear and colorless	-Normal: Clear and colorless -Bacterial: turbid -Tuberculous: fibrin web -Viral: clear
Glucose CSF and RBS ratio	0.35	- Bacterial meningitis: < 0.5 - Tuberculous meningitis: <0.5 -Viral meningitis: >0.5
CSF C&S	no growth -pus cell: nil -organism: not seen	
Latex cryptococcus	Negative	
AFB smear	No AFB seen	
CSF TB C&S	Pending	
Gram stain	Negative	
Indian ink	No encapsulated organism seen	
CSF for syphilis	Non-reactive	
CSF fungal culture	No growth	
CSF non-gynaecology	Numerous lysed RBC (peripheral blood contamination)	

Table 2: Viral screening result

Test	Result	Reference range
HIV ELISA (Ag/Ab)	Reactive. 128.900	<0.9: non-reactive, 0.9-1.0 : borderline, >1.0 : reactive
HBs Ag	Non-reactive	
Anti HCV EIA	Reactive. 54.100	
VDRL	Non-reactive	
CD4 Count	143 cells/ul	

The patient was referred to the neurosurgical team and was placed on a toxoplasmosis treatment regime. The regime included C. Clindamycin 600mg QID and T. Pyrimethamine 75mg OD and T. Folinic acid 10 mg OD. He was also given intravenous (IV) Dexamethasone 3mg BD for three days, then 2 mg BD for three days. Other medications include T. Bactrim 1 tab OD for Pneumocystis jiroveci pneumonia prophylaxis (PCP). The toxoplasmosis treatment regime continued for 6 weeks.

His condition improved and was discharged after a week of admission. Four weeks later, he was examined at the neurosurgical clinic and a repeated CT Brain (Figure 2) was performed. The vasogenic edema and leptomeningeal enhancement resolved, the basal cistern was patent, and no midline shift was observed.

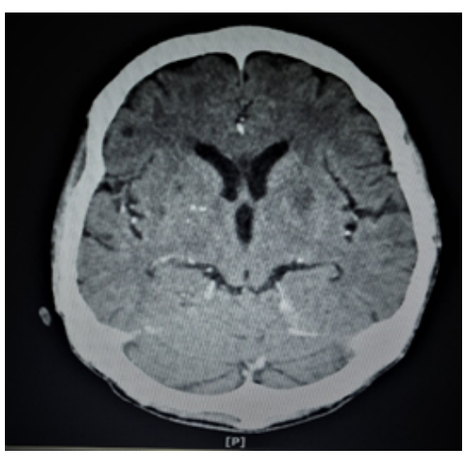

Figure 2: CT Brain after 4 weeks of Toxoplasmosis treatment

Given his improved functional status, adherence to treatment, and improvement observed in the CT brain, the patient was immediately started on ART, which were T. Tenofovir Emtricitabine 1/1 ON, and T. Efavirenz 600mg ON. His CD4 count was 143 cells/ul during follow-up. Furthermore, toxoplasmosis treatment (C. Clindamycin 600mg QID, T. Pyrimethamine 75mg OD, and T. Folinic acid 10 mg OD) were maintained until his CD4 value > 200 for at least 6 months. Trimethoprim-sulfamethoxazole (TMP-SMX) was not prescribed given the PCP prophylaxis was covered with pyrimethamine. Due to his co-infection with hepatitis, he was also being monitored by the gastrologist. However, the plan was to commence his treatment for Hepatitis C after the toxoplasmosis treatment was completed.

DISCUSSION

ART is recommended for HIV patients regardless of CD4 count, to reduce the morbidity and mortality associated with HIV infection. However, in the event of opportunistic infection, many factors must be considered before starting ART. Delaying ART, in contrast, increases the risk of progression to AIDS and death. Most guidelines recommend starting ART at the end of two weeks of opportunistic infection

therapy. If the patient is stable and has improved, initiation of ART could be considered ' . However, the risk for immune reconstitution inflammatory syndrome (IRIS), risk of drug interaction, pill burden and adherence, and CD4 level need to be considered before starting ART

IRIS is an inflammatory disorder whereby there is a temporary worsening of the pre-existing infection three to six months after initiation of ART and is most commonly seen in Tuberculosis infection – . ART was known to be initiated earlier especially in a non-tuberculous infection and low baseline CD4 count while certain conditions such as tuberculous infection in patients with CD4 >50 cells/microL, and cryptococcal meningoencephalitis may benefit a delay in ART due to risk of IRIS and drug interactions .

Recommended initial treatment for toxoplasmosis is Pyrimethamine, Sulfadiazine, and Leucovorin (Folinic acid) for at least 6 weeks . Clindamycin is the alternative to Sulfadiazine as it has higher cutaneous side effects. Folinic acid is important to prevent pyrimethamine-induced hematologic toxicity. Maintenance therapy after the initial regime is usually continued lifelong to prevent recurrence and can be discontinued if patients remain asymptomatic and have maintained their CD4+ counts of >200 cells/μL for at least 6 months . Maintenance therapy should be reinitiated if the CD4 cell count declines to <200 cells/microL .

ART is associated with a decreased rate of liver fibrosis progression. However, due to the risk of antiretroviral-induced hepatotoxicity, treatment should only be considered in a patient who is motivated and keen on the treatment. Other conditions that need to be considered to delay treatment is that the patient must be non-cirrhotic or Child-Pugh grade A, CD4 count > 200cells/ml, no underlying opportunistic infections or concurrent infections including tuberculosis, no contraindications for interferon and/or ribavirin therapy, absence of concurrent illicit drug use, and significant liver fibrosis on liver biopsy (if performed)

The most common prophylaxis in HIV patients is against PCP and tuberculosis as they are the most common infection. Trimethoprim-sulfamethoxazole (TMP-SMX) is the recommended prophylactic agent for PCP. Pyrimethamine's off-label use is for PCP prophylaxis. Therefore, patients who are receiving pyrimethamine for the treatment or suppression of toxoplasmosis do not require additional PCP prophylaxis'

Despite a good pharmacological treatment plan, we must also consider other challenges in managing HIV with multiple co-infections. Since patients need to commit to multiple medications and be placed on life-long HAART, the factors that may influence their complaint to treatment needs to be addressed. These factors include issues with confidentiality, pill burden, caregiver support, social support, and the patient's mental health issue.

CONCLUSION

Neurological symptom is one of the clinical presentations of cerebral toxoplasmosis. Associated symptoms such as fever and headache in an immunocompromised patient should raise suspicion. Thus, comprehensive social background history including high-risk behavior is important to come into diagnosis. Although guidelines suggest starting ART as early as 2 weeks, other factors need to be considered such as pill burden; patient's motivation for treatment and follow-up; family support; medication side effects, and adherence. All factors need to be considered for the best clinical outcome.

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