A Patient with AIDS and Embolic Stroke: A Case Report

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Abstract

Human immunodeficiency virus (HIV) infection is a global concern. Globally, 36.7 million people are living with HIV and 1 million people died at the end of 2016. There is an association between human immunodeficiency virus (HIV) infection with neurological manifestations. Between 1% and 5% of patients with HIV develop stroke. The pathogenesis of AIDS with stroke is still controversial. A 37-year-old male patient with AIDS had an embolic stroke. The diagnosis of the patient was based on clinical condition and the CT scan results of the head with contrast. The stroke-causing mechanism in patients is HIV-associated vasculopathy that results from accelerated atherosclerosis. After administration of antiplatelet and statin, the patient's condition improves.

Keywords: *Embolic Stroke, Vasculopathy, Atherosclerosis, HIV*

Introduction

Human immunodeficiency virus (HIV) infection is a global issue. There are approximately 36.7 million people in the world infected with HIV in 2016 and 1 million people who die each year[(1)]. People with HIV / AIDS have a higher risk of developing neurological disorders and the most common neurological disorder is ischemic stroke. [(2),(3)]

HIV patients who had a stroke were recorded at 1-5%, and 4-34% of HIV patients had ischemic stroke lesions at the time of autopsy. In the USA, the incidence of ischemic stroke in HIV patients reaches 5.27 per 1000 population compared to 3.75 in patients without HIV. This number has increased by 43% in the last 9 years. [(4),(5),(6)]

Stroke has a high mortality rate and reduces the quality of life of the sufferer. WHO in 2002 recorded that 15 million people in the world suffer from strokes each year, with 5 million of them causing death, while the other 5 million have permanent disabilities. The pathogenesis and management of AIDS sufferers who experience a stroke are still being debated. [(4),(7)]

Seeing the high incidence of stroke in HIV / AIDS patients and the magnitude of the problems that occur, the authors would like to discuss more about stroke in HIV / AIDS patients.

Case Description

Mr. M.N., age 37 y.o., came to the emergency department of Dr. Soetomo Hospital complained of weakness of right extremities. The patient presented with acute right hemiplegia with the difficulty of speaking 3 days before admission after woke up in the morning. He denied seizures, nausea, vomiting nor decreased of consciousness. He hadn't complained of diarrhea, headache, or cough. He complained difficulty of eating and drinking. He also felt pain when swallowing. Weight decreased from 55 kg to 48 kg in the last 1 year.

Patients were diagnosed with HIV / AIDS since 10 years ago. History of stroke 2 months before admission and treated in Sidoarjo hospital. No history

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of diabetes mellitus, hypertension, heart disease, and blood disorders. There is a history of injecting drug use. Freesex is denied. The patient has married with 1 child. Neither his wife nor his child is infected.

On physical examination, body-weight 48 kg, body-height 161 cm, BMI 18,5 kg/m2. Blood pressure 110/80 mmHg, heart rate 92 bpm, breathing 20x/minutes, axillary temperature 36.5^{0}C, oxygen saturation 99% room air. No enlargement of a lymph node, anemia, icterus, and cyanosis. Examinations of heart, lung, abdomen were normal. There was right hemiplegia with 0 motoric scores for the right extremities.

From the laboratory examination, hemoglobin 13 g/dL, leucocyte 8.97x10^3/uL, thrombocyte 255x10^3/uL, HbsAg and Anti-HCV non-reactive, total cholesterol 156 mg/dl, triglyceride 164 mg/dl, HDL 22 mg/dl, LDL 108 mg/dl, AST 27 u/l, ALT 31 u/l, BUN/creatinine 17/0.72 mg/dl, CD4 9 cell/uL. Head CT scan with contrast: subacute-chronic tromboembolic cerebral infarction in left fronto-temporo-parietocipital lobe, left putamen and left nucleus caudatus (left MCA and LSA). Echocardiogram and echocardiography within normal limit.

The patient was diagnosed with AIDS with a second attack of embolic stroke. As treatment, patient received high calories and high proteins diet 2100 kcal/day, Cytidine 5'-diphosphocholine 500 mg every 12 hours (iv), acetylsalicylic acid loading dose 300 mg continued 100 mg daily (PO), Simvastatin 20 mg per day at night (PO) and fixed-dose combination (FDC) of antiretroviral therapy (Tenofovir/TDF 300mg, Lamivudine/3TC 150mg efavirenz/EFV 600mg) 1tab/day (PO). After 1 week, the patient could move his extremities with 3 motoric scores for the right extremities.

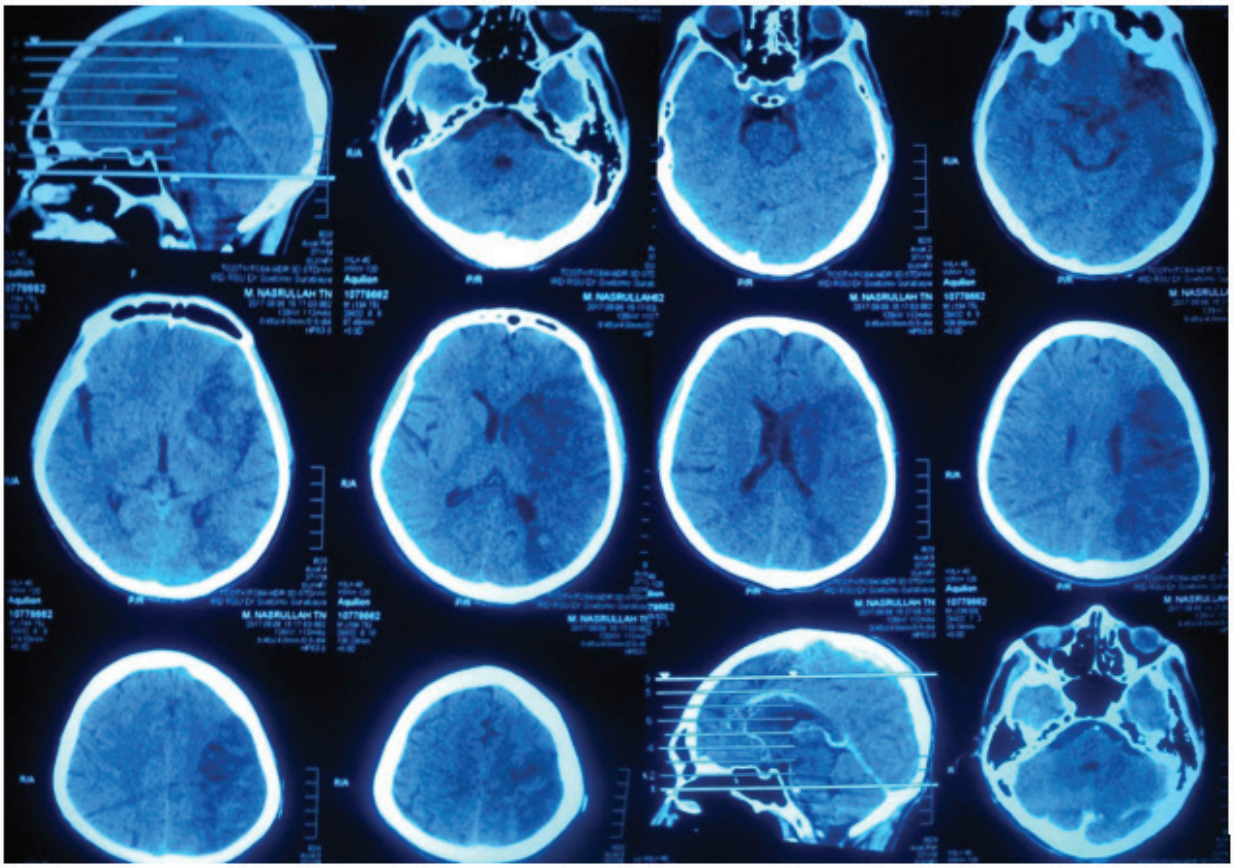

Figure 1: Head CT scan with contrast. Subacute-chronic thromboembolic cerebral infarction in left fronto-temporo-parietocipital lobe, left putamen, and left nucleus caudatus (left MCA and LSA).

Discussion

AIDS is a collection of symptoms or diseases caused by decreased immunity due to infection by the HIV which belongs to the retroviridae family where AIDS is the final stage of HIV infection [8],[9]. The classification of HIV / AIDS stages based on WHO can be seen in table 1.

Our patient had a history of HIV / AIDS with difficulty swallowing and wasting syndrome so we diagnosed him with AIDS.

Stroke is a brain injury caused by a sudden disruption of blood supply to the brain. The diagnosis of stroke is based on clinical, focal neurological disorders and based on imaging studies. The stroke itself is classified into ischemic, hemorrhagic stroke, and transient ischemic stroke (if the symptoms are less than 24 hours). [10],[11]

Our patient had a history of stroke and focal neurological disorders in the form of weakness of the right extremities with a motor score = 0 and positive pathological reflexes. Head CT scan revealed subacute-chronic thromboembolic cerebral infarction in the left fronto-temporo-parietoocipital lobe, putamen, and left caudate nucleus (according to MCA and left LSA territories). So our patient was diagnosed with AIDS with a second attack embolic stroke.

The mechanism of stroke in HIV infection includes opportunistic infection, vasculopathy, cardioembolism, and coagulopathy[4]. The mechanism by which stroke occurs in HIV infection determines the necessary therapy. This mechanism can be seen in table 2.

The patient had an embolic stroke. There are no signs of infection or neoplasm that can cause a stroke. Cardiovascular examinations were within normal limits so that the cause of a stroke is suspected associated with vasculopathy which is accelerated atherosclerosis.

The pathogenesis of HIV-related vasculopathy occurs due to the role of inflammation and remodeling of blood vessel walls. Direct exposure to HIV and viral particles to the endothelium of blood vessels cause endothelial dysfunction. Indirect damage to the endothelium occurs due to the migration of infected monocytes to the endothelium of blood vessels. The CCL2 chemokine released by infected monocytes attracts leukocytes even more. This condition causes inflammation of the blood vessels resulting in upregulation of adhesion molecules that increase the adhesion of both infected and uninfected leukocytes, as well as the release of HIV virions into the smooth muscle of blood vessels and active replication of the virus in the blood vessel walls. The resulting inflammatory cytokines will also increase the production of reactive oxygen species (ROS), disruption of the coagulation system, and occur remodeling blood vessel walls. Remodeling of blood vessels in the form of hyperplasia of the tunica intima and elastic lamina, formation of atherosclerosis, and triggering thrombotic occlusion. Administration of antiviral drugs (ARVs) can also cause endothelial dysfunction. This process is thought to occur due to autoreactive self-destruction due to an increase in the autoimmune system.[12],[13]

The management of HIV patients with embolic stroke is the same as that of stroke patients in general. Based on the 2014 AHA / ASA guidelines, the management of stroke caused by stenosis of the intracranial large arteries is by administering aspirin 325 mg/day. Aspirin is recommended over warfarin. If the blockage is very severe (70-90%), clopidogrel 75 mg can be added for 90 days although currently there are no studies regarding dual antiplatelet administration. In addition, the systolic blood pressure was kept below 140 mmHg. Statin is recommended as a preventative for recurrent stroke events. Invasive measures such as stenting, angioplasty, and thrombolysis drugs are controversial and are not currently recommended. ARV drugs are still controversial because they can also lead to endothelial dysfunction. But given the enormous benefits it has for HIV therapy and the many other mechanisms that can trigger stroke in HIV patients, it is currently recommended to keep it. [4],[11]

Patients received therapy: head-up position 30^0, high calories and high protein diet, NaCl infusion of 0.9% 1000 ml per 24 hours, injection of 500 mg Cytidine 5'-diphosphocholine every 12 hours. Patients have also given an oral loading dose of 300 mg acetylsalicylic acid followed by maintenance of 100 mg acetylsalicylic acid per day, paracetamol 500 mg per 8 hours, and simvastatin 20 mg per day at night. In addition, we provide ARV

FDC once per day.

Therapy for patients is following the 2014 AHA / ASA guideline, where we provide antiplatelet in the form of acetylsalicylic acid with a loading dose of 300 mg followed by maintenance of 100 mg per day with a statin. We don't give anti-hypertensive drugs because the patient's systolic blood pressure is below 140 mmHg. ARV drugs are also given to patients. In the course of the patient's condition improved.

Conclusion

A 37-year-old male patient with AIDS accompanied by an embolic stroke was reported. The patient's diagnosis was made based on clinical and head-contrast CT scan results. The mechanism that causes stroke in patients is HIV-associated vasculopathy which occurs due to accelerated atherosclerosis. After administering antiplatelet and statins, the patient's condition improved.

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Ethical Clearance: Not required for a case report.

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