

**ISCHEMIC STROKE IN YOUNG ADULT FEMALE PATIENTS WITH HIV AND PULMONARY TUBERCULOSIS IN ARV AND OAT TREATMENT AT WANGAYA REGIONAL PUBLIC HOSPITAL DENPASAR**

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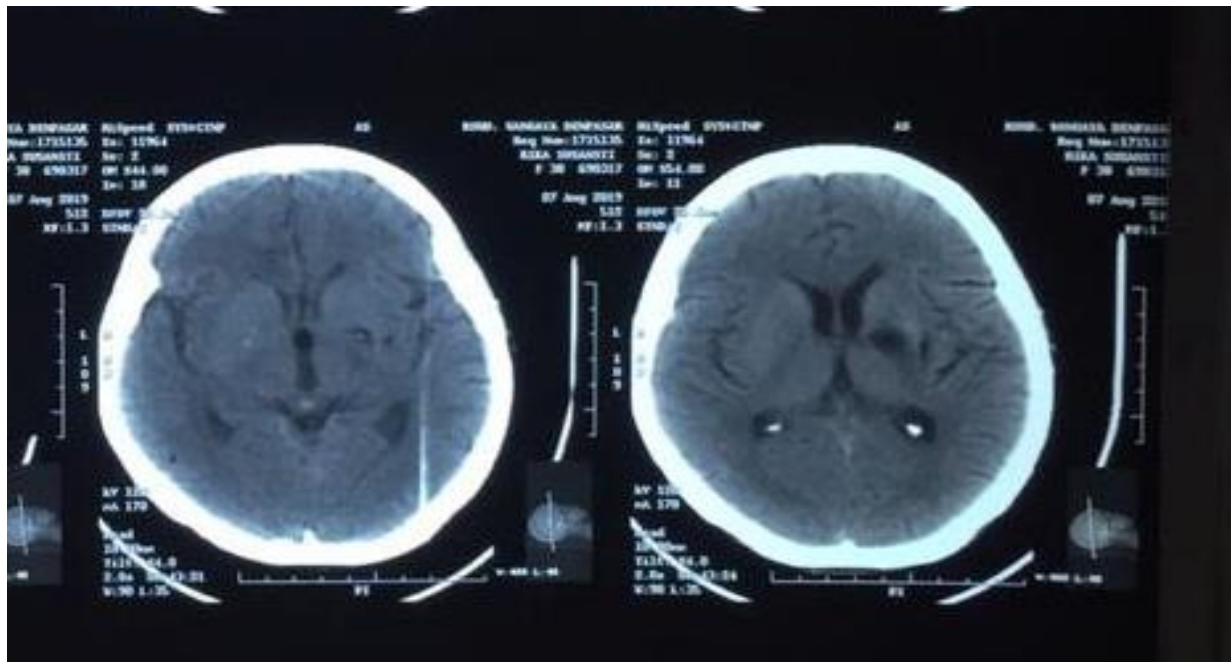
**INTRODUCTION**

Evaluation should be conducted comprehensively on HIV patient with hemiparesis as it has variant etiologies. One of which is ischemic stroke. This report is about a young adult female who suffers ischemic stroke with HIV and pulmonary TB. Further evaluation showed that this patient was diagnosed to have ischemic stroke because of vasculopathy. The patient recovered gradually after the treatment at hospital.

**Case**

A 38 years old Indonesian woman came to emergency room. She suffered from weakness on the left part of body for 3 days previously and it got worse. Weakness on right facial muscle, right limb, and speech disorder were found. She said that it never happened. The patient is an HIV patient with wasting syndrome (her weight dropped from 67 kg to 38 kg). She has been taking HIV treatment (lamivudine 150mg, tenofovir 300mg and efavirenz 600mg) for 1 year. Besides, she has been taking OAT treatment (isoniazid 150 mg dan rifampicin 150 mg) for 4 months because of pulmonary TB. She does not have diabetes mellitus, high blood pressure, high cholesterol and cardiac disease. She is not a smoker and nobody in her family has stroke.

The checkup result showed composmentis, GCS 456, as a whole she was in good enough condition. Her weight: 38 kg, height: 155 cm. Blood pressure 120/80, pulse 86 times/minutes, respiratory rate 20, body temperature 36,60C. Neurology check indicated dysarthria, muscle weakness on right face and limb. Siriraj score is <1. Lungs, heart and abdominal are normal. Blood sugar 84 mg/dL, ECG is normal. Complete blood count: WBC : 6,92 x 103/ $\mu$ L, erythrocytes : 4.16 x 106/ $\mu$ L, HGB: 12,1 g/dL, HCT: 38,7%, MCV: 93,0 fl, MCH: 29,1 pg, MCHC 31,3 g/dL PLT: 360 x 103/ $\mu$ L, neutrophils 31,0 %, Lymphocytes 54,2%, Monocytes 8,7%, Eosinophil 5,2%, Basophils 0,9%. Electrolytes: sodium 142 mmol/L, potassium 3,9 mmol/L, chloride 109 mmol/L. Blood chemistry: ureum 19 mg/dL, serum creatinine 0,6 mg/dL. Immunoserology check Anti Toxoplasma IgG is 0 UI/mL.



Imaging test: head CT scan: hypodense lesions in left basal ganglia with suspected subacute ischemic cerebral infarction.

During 7 days treatment at the hospital, the patient was given IVFD RL 20 droplets/minute, oxygen 3Lpm, citicoline injection 2 x 500 mg, methylprednisolone injection 2 x 62,5 mg, aspilet 1x 80mg, cotrimoxazole 1x960mg, FDC ARV (lamivudine 150mg, tenofovir 300mg, efavirenz 600mg) 1x1, FDC OAT (rifampicin 150mg, isoniazid 150mg) 3 times a week, folate acid 2x2mg.

The patient was getting better on the 3rd day. She did not show any weakness on her right part of body but tingling sensation appeared sometimes.

## DISCUSSION

HIV patient with cerebrovascular is high enough, it is said that 70% of the patients will suffer neurology disorder, in most cases is ischemic stroke.<sup>1</sup> Dysarthria and hemiparesis in this patient indicate brain disorders. A research conducted in U.S found 5,27 cases of stroke among 1000 HIV patients, while only 3,75 cases of ischemic stroke were found in non-HIV patients. It is as an evidence that HIV is one of ischemic stroke factors.<sup>2</sup> A research conducted in Tanzania supports it, stating that HIV is one factor of stroke, if ARV is not given.<sup>3,4</sup>

Some potential etiologies might be the factors of ischemic stroke in HIV patients such as cardiac disease (non-bacterial thrombotic endocarditis, infective endocarditis, myocarditis), other diseases in vascular (vasculopathy, might be of HIV vasculopathy, virus infection (CMV, VZV, HSV), bacteria (mycobacterium tuberculosis, syphilis) fungi (candida albican, aspergillosis, coccid mycosis,

cryptococcosis), parasite (toxoplasmosis, trypanosomiasis), coagulation disorder (S protein deficiency, the presence of antiphospholipid antibodies, and DIC), opportunistic infections in the brain (toxoplasmosis), neoplasms in the brain (lymphoma), injecting drug (cocaine and heroin).<sup>5</sup> In addition, other chronic infections in HIV cases such as tuberculosis can also be a risk factor for an ischemic stroke.<sup>6,7</sup> In this patient the suspected etiology of ischemic stroke is vasculopathy by HIV infection and chronic pulmonary TB infection, where other factors such as abnormalities in the heart shown from the ECG results, opportunistic brain infections from serological IgG toxoplasmosis results, neoplasms from CT scans, and history of injection narcotics used have been removed, only risk factors for coagulation disorders that cannot be ruled out.

In a case-control study, the most common cause of ischemic stroke in HIV was micro occlusion in the brain, then followed by arteriosclerosis and cardioembolism.<sup>8</sup> In this patient the head CT scan showed a hypodense lesion in the left basal ganglia, which indicates a blockage of blood flow to that part of the brain due to ischemic processes. The pathogenesis of ischemic stroke in HIV and tuberculosis patients is uncertain, suspected infection of the HIV virus in the cerebrovascular environment, such as perivascular, macrophages, astrocytes, which is infected can release viral proteins that are neurotoxic, such as the gp 120 protein, TAT, Nef. Viral proteins can damage blood vessel endothelium.<sup>9,10,11</sup>

Viral protein also enhances chemo activity regulation expression, adhesion molecules and proinflammatory cytokines which can damage the blood brain barrier and increase the migration of leukocytes to the brain. Likewise, infected or uninfected cells, both of which can release pathogenic factors, through changes in vasoactive property of blood vessels and endothelial vasodilator production, these proinflammatory cytokines can cause vasospasm, thrombosis and arteriosclerosis in the blood vessels of the brain which can interfere with blood flow consequently stroke is potentially occurs.<sup>12,13,14,15</sup> This is evidenced by a cohort study by conducting autopsies in HIV patients, who have had strokes, in which a characteristic is found in accordance with the pathogenesis above such as narrowing of small blood vessels, perivascular dilatation, deposition of cells inflammation and mineralization of blood vessel walls.<sup>3</sup> While infection of chronic pathogenesis TB of an ischemic stroke is similar to HIV, namely the existence of persistent activation of the inflammatory response, where activation of chemokines, cytokines and other pro-inflammatory cells can cause dysfunction of blood vessel endothelium, one of them is cerebrovascular.<sup>7</sup>

Treatment for patients with ischemic stroke in HIV and tuberculosis due to vasculopathy in cerebrovascular, in this case is not much different from the treatment of ischemic strokes in general, such as fluid administration, oxygenation, neuroprotectant, and antithrombotic. ARV and OAT are given according to the procedure. However, in this case other therapies were given such as 2x62.5 mg methylprednisolone and 2x2 mg folic acid. The benefits of giving methylprednisolone in stroke patients are still controversial because the benefits have not been proven.<sup>16</sup> But, administering high

doses of methylprednisolone to animals improve the condition of cerebral edema that occurs and can help improve blood flow in the area of ischemia, 17 as well as anti-inflammatory effects and apoptotic suppressant effects in ischemic stroke cases can prevent worsening of the condition by brain neurons damage.18,19,20 After obtaining treatment for 3 days, the patient showed clinical improvement such as motor muscle strength was better, and dysarthria was not found. The patient was discharged on the 7th day of treatment since her condition was stable.

## CONCLUSION

HIV patients with neurological symptoms can be caused by a variety of etiologies such as opportunistic infections, vasculitis, vasculopathy, coagulation disorders to neoplasms, therefore a comprehensive examination is required. Rapid, precise diagnosis and treatment provide good treatment response to ischemic stroke patients with HIV and tuberculosis. Giving methylprednisolone shows improvement in symptoms in this case. It can be concluded that from this case, HIV and TB infection are risk factors for ischemic stroke at a young age.

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