Basilar Artery Occlusion In A Young Man Related To Coinfection of Neurosyphilis and Human Immunodeficiency Virus

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Abstract

The meningovascular complication of syphilis and human immunodeficiency virus (HIV) infection is not uncommon. A young man with no atherosclerotic and cardiac risk factors presented with acute brainstem infarct resulting from basilar artery occlusion. His condition deteriorated rapidly despite aggressive antithrombotic therapies. Brain imaging revealed old lacunes in addition to the current brainstem ischemic lesions. The patient was diagnosed to have neurosyphilis and human immunodeficiency virus infection after work-ups. The patient began a gradual neurological improvement after antibiotic treatment and combination antiretroviral therapy. Ischemic stroke can be the first clinical presentation in syphilis and HIV-infected persons. Earlier diagnosis and treatment of the causative infectious disease is important and can provide a better stroke outcome. (J Intern Med Taiwan 2015; 26: 227-231)

Key Words: Basilar artery occlusion, Neurosyphilis, Human immunodeficiency virus infection

Introduction

Syphilis is well known to cause a broad spectrum of neurological disorders including meningovascular complication. Human immunodeficiency virus (HIV) infection can also result in ischemic stroke via several mechanisms including HIV-related vasculopathy[1]. In recent decades, the incidence of syphilis has risen especially among HIV-infected persons. Co-infection of syphilis and HIV is not uncommon, and stroke can be the first and primary clinical manifestation. Both syphilis and HIV infection may lead to inflammatory damage on vessel wall, propagating atherogenesis and then stenotic-occlusion of the vessel lumen. Hence, the early recognition and treatment of causative infection is important in these patients. Herein, we report our clinical experience in a man with basilar artery occlusion and worsening brainstem infarction, who was diagnosed to have neurosyphilis and HIV co-infection. His neurological symptoms improved after proper antibiotic and antiviral treatment.

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Case Report

A 32-year-old man with acute onset of malaise and drowsiness presented to our emergency department. Upon arrival, his vital signs were all normal, and the initial neurological evaluations were unremarkable except for somnolence. Initial hematological, biochemistry studies and inflammatory markers were normal. Emergency brain computed tomography revealed one old lesion at left thalamo-capsule area (Figure 1). He was initially treated with intravenous normal saline and oral aspirin; however he gradually fell into a deep drowsy state. After admission to the neurological ward six hours later, a subsequent neurological evaluation revealed that deviating gaze toward the left side, decorticate posture on the left limbs, and bilateral ankle clonus. Brain magnetic resonance imaging with contrast showed acute infarcts involving bilateral pons and medulla oblongata, and old small infarct at the left thalamo-capsule area(Figure 2). Magnetic resonance arteriography showed occlusion of the basilar artery (Figure 3). Due to progressive deterioration, continuous intravenous heparin was given. However, his neurological conditions deteriorated with deep coma and biplegia. Etiological surveys of stroke including serology, autoimmune and cardiac studies were all normal except for a serum Rapid Plasma Reagin (RPR) quantitative test which was positive (1:32) and confirmed by a positive serum Treponema Pallidum Particle Agglutination assay (TPPA) with titers over 1:2560. Further cerebrovascular spinal fluid analysis showed 39 leucocytes per uL with 82% lymphocytes, glucose 34 mg/dL, protein 338 mg/dL, and a positive Venereal Disease Research Laboratory (VDRL) test (1:4). Therefore, the patient was diagnosed to have meningovascular

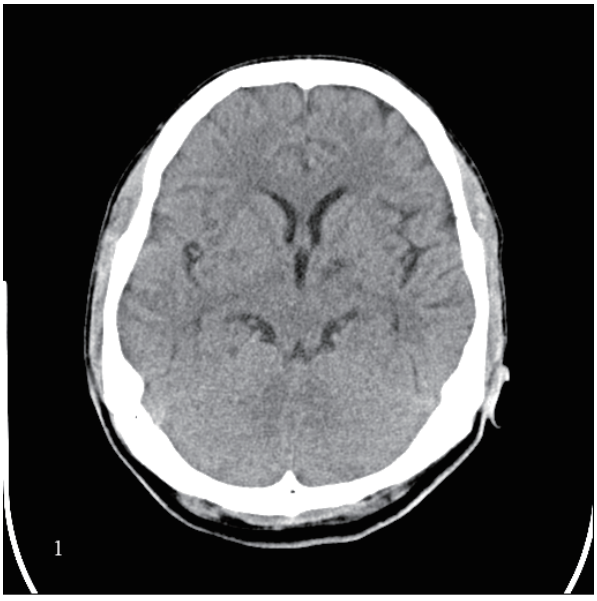

Figure 1. Noncontrast computed tomography (CT) scan of the brain revealed a samll hypodense lesion near left thalamocapsular area.

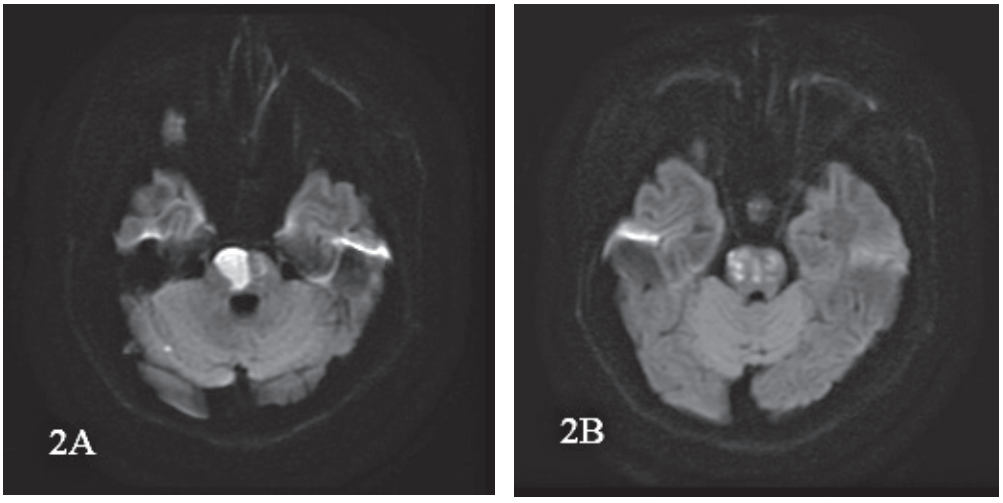

Figure 2. Axial diffusion weighted images of brain showed diffusion restriction hyperintensities at bilateral pons (A) and left high medulla oblongata (B).

syphilis presenting as acute basilar artery occlusion with brainstem infarcts, and old silent lacune involving the left low thalamo-capsule area.

Tracing the patient's history through his parents, he was healthy and had no significant past medical illnesses. He did not smoke or use illicit drugs. He was single and had lived with the parents for half a year after moving back from Taipei. The families did not acknowledge his sexual relationship. With the parents' consent, he was tested for HIV by enzyme-linked immunoassay which was found to be positive and confirmed by a positive HIV Western blot test. The HIV virus load was 221361 copies/ml, the CD4+ count 24/uL and CD4+/CD8+ ratio 0.05. He was therefore proven to have HIV infection, but without other opportunistic infection, nor clinical evidence of acquired immunodeficiency syndrome (AIDS). He was promptly treated with intravenous penicillin G for neurosyphilis, and combination antiretroviral therapies (cART) including efavirenz, zidovudine and lamivudine for HIV infection. His neurological conditions began to improve after starting the combined antibiotic and antiviral treatments. After completing the antibiotic treatment for 14 days, he became fully conscious. The only neurological sequel was left hemiparesis one month later. About 18 months after discharge, he continued cART and intensive rehabilitation with steady neurological improvement.

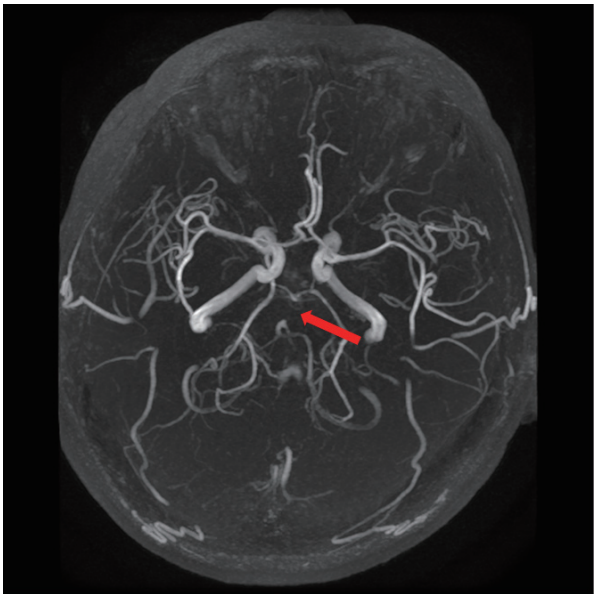

Figure 3. The time-of- flight magnetic resonance angiography (TOF-MRA) showed occlusion of basilar artery (arrow) with intracranial reconsititution of distal basilar tip and bialteral posterior cerebral arteries via posterior communicating arteries.

Discussion

Syphilis, a chronic infection caused by Treponema pallidum, can cause a variety of neurological disorders either in meningeal, vascular or parenchymal forms, which are all known as neurosyphilis. In the early 20th century before the discovery of penicillin, syphilis was a major public health problem, with neurosyphilis developing in about a third of the patients and mostly in the form of late neurosyphilis such as general paresis or tabes dorsalis. Meningovascular syphilis as a form of early neurosyphilis was regarded uncommon. In recently decades, several studies have shown that the incidence of syphilis is rising[2,3], primarily due to illicit drug use, an increasing number of sexual partners, and the co-infection with HIV. Syphilis has been found to occur proportionally higher among HIV-infected persons, and to have a more malignant course with a shorter latency period before the development of meningovascular syphilis.[4] Meanwhile, the risk of stroke resulting from neurosyphilis has also been reported to be increased in non-HIV patients.[5] One retrospective study in China reported that up to 14% of neurosyphilis patients developed ischemic stroke as a primary symptom.[5] None of these patients were suspected of having meningovascular syphilis during treatment for the stroke. However, compared with the pre-antibiotic era and pre-HIV era, several studies in several countries have related that meningovascular syphilis is more common now[6-9].

Endarteritis secondary to neurosyphilis can develop in the vessels anywhere in the brain

including the basilar artery, intracranial internal cerebral artery, or even deep small perforating arteries. The pathological findings of syphilitic vasculitis are characterized by fibrous and inflammatory changes in the intima and adeventia, which lead to stenotic occlusion of vascular lumens. Lately, HIV infection is also found to have a strong association with ischemic stroke via several mechanisms including HIV-related vasculopathy, cardiac embolism, coagulopathy, or opportunisitic infection.[1] The HIV-related vasculopathy, caused from inflammatory damage on endothelium, propagating atherogenesis then thrombotic occlusion, can involve the intracranial or extracranial cerebral vessels.[10] It is difficult to differentiate between syphilis-related endarteritis and HIV-related vasculitis through clinical manifestations or image findings. In our case, both infections could be pathogenic. Regarding the location of stroke in HIV-infected patients, the posterior circulation stroke is found less frequent than anterior circulation stroke in a small hospital-based observation study.[11] Actually, either the meningovascular syphilis or HIV-related stroke is uncommon in southern Taiwan. There were over 800 admissions with acute ischemic strokes per year in the stroke center of our hospital, and the admitted patients with age less than 50 years were all received RPR or TPHA examinations. There were only two patients diagnosed with neurosyphilis within recent two decades. Over 500 HIV-infected or AIDS patients were registered and treated at our hospital, and there were only two patients diagnosed with ischemic stroke. The strokes caused by neurosyphilis or HIV infection are usually underdiagnosed, and these cases will probably suffer from recurrent stroke if there is no proper therapy.[5] The present case in out report actually had old ischemic lesion before the current brainstem infarction. His strokes were the first and primary clinical presentation of the co-infection of syphilis and HIV. He began to have neurological recovery after adequate antibiotic and cART treatment, and had no clinical evident recurrent stroke during a follow-up period up to 18 months. The proper antibiotic and antiviral therapy was important for getting a better neurological outcome.

Conclusion

This case report highlights that acute stroke can be the primary presentation of neurosyphilis and/or HIV infection. Neurosyphilis and HIV infection should always be considered among stroke patients of unknown etiology especially the younger persons. In addition, the stroke patients related to syphilis and/or HIV infection should receive immediate and adequate infection treatment.

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年輕男性合併感染神經性梅毒及人類自體免疫不全病毒導致基底動脈發炎阻塞

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摘 要

感染梅毒合併人類自體免疫不全病毒 (HIV) 的病人可以腦膜炎併顱內血管炎作為最初期的臨床表現。本文報告一位健康且無慢性疾病的年輕未婚男性，因為急性意識障礙被送醫院急診接受診治。病人的神經症狀於數小時內急速惡化，緊急腦部影像檢查確診為基底動脈阻塞致腦幹梗塞。進一步的一系列中風病因檢查包含血清及腦脊髓液檢查結果，最後證實病患罹神經性梅毒，導致腦膜腦炎併顱內血管炎，此時追加檢驗，同時發現病人已經感染人類自體免疫不全病毒，雖然臨床無其他的伺機性感染。結論：梗塞性中風可以是神經性梅毒引發顱內血管炎的初期臨床表徵；年輕中風病患一旦確診罹患神經性梅毒病患，務必特別注意是否同時合併人類自體免疫不全病毒的感染，才能給予適當及週全的臨床治療。