Postictal Confusion as the Initial Presentation of Dilated Cardiomyopathy: A Case Report and Review of Literatures

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Abstract

Acute dilated cardiomyopathy (DCM) is associated with an increased risk of left ventricular (LV) thrombus and subsequent thromboembolism diseases. Multiple sites of acute brain infarctions as the first manifestation of DCM had never been reported before. Here we report a 34-year-old man who presented generalized tonic clonic seizure and postictal confusion as the initial manifestation of acute DCM complicated with LV thrombus and multiple sites of acute brain infarction. This case highlights that physicians should have high alert to the underlying etiology of acute ischemic stroke (AIS) in young patients. Additional imaging modalities may be necessary to elucidate the nature of seizure and confirm the diagnosis of AIS. An early echocardiographic examination is necessary to justify the risk-benefit of the use of anti-coagulation or thrombolytic therapy. The presence of LV thrombus and seizure at the onset of stroke could be management dilemma of this patient. (J Intern Med Taiwan 2010; 21: 133-139)

Key Words：Acute ischemic stroke; Embolism; Dilated cardiomyopathy; Mural thrombus; Seizure

Introduction

Acute dilated cardiomyopathy (DCM) is associated with an increased risk of left ventricular (LV) thrombus and subsequent thromboembolism diseases. Multiple sites of acute brain infarctions as the first manifestation of DCM had never been reported before. Here we report a young patient who presented generalized tonic clonic seizure (GTCS) and postictal confusion as the initial manifestation of DCM complicated with LV thrombus and multiple sites of acute brain infarction. The presence of LV thrombus and seizure at the onset of stroke could be management dilemma of this patient. Relevant issues are discussed.

Case report

A 34-year-old man presented to the emergency department (ED) because of confusion. The bystander had found him to have GTCS and

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subsequently developed postictal confusion. Based on the statements of his families, he did not have any systemic illnesses before. He had been well until 2 months earlier when he suffered from flu-like symptoms. Two weeks earlier, he developed fatigue and exercise intolerance and had been noticed to have cardiomegaly on routine physical check-up. On arrival, he appeared somnolence but easily arousable with a blood pressure 138/68 mmHg, pulse rate 72 beat/min, respiration rate 18 breath/min, and body temperature 36.6 ℃. The result of a focused neurologic examination revealed no signs of lateralization but impaired finger-to-nose test. There was no pathological reflex. A capillary blood glucose measurement was 137 mg/dL. The results of laboratory examinations disclosed a white cell count 17,000/ uL, hemoglobin 14.3 g/mL and platelet 72,600/uL. The serum creatine kinase was normal, but the cardiac troponin I level was elevated up to 1.64 ng/L (＜0.5 ng/L). The 12-lead electrocardiography revealed marked LV hypertrophy. An unenhanced cranial computed tomography (CT) revealed a focal edema over the right parietal-temporal lobe. Magnetic resonance (MR) imaging of the brain confirmed the diagnosis of multiple acute brain infarctions over the right frontal and temporal lobes; bilateral parietal and occipital; as well as the right cerebellum (white arrows, Figure 1A). On MR angiography, the follow signal distal to the left P3 was not visualized (black arrow, Figure 1B). There was no meningeal enhancement. A cardiologist was consulted and a transthoracic echocardiography (TTE) revealed a dilated LV and left atrium (LA), generalized hypokinesia with poor LV ejection fraction (EF) of 15-20%, and a mass, measured 1.0 x 1.4 cm in the LV apex (arrows, Figure 2). Transesophageal echocardiography (TEE) was refused by the patient. He was admitted to the stroke center and treated with unfractionated heparin given intravenously and aspirin 100 mg per day. Wafarin 1.25 mg

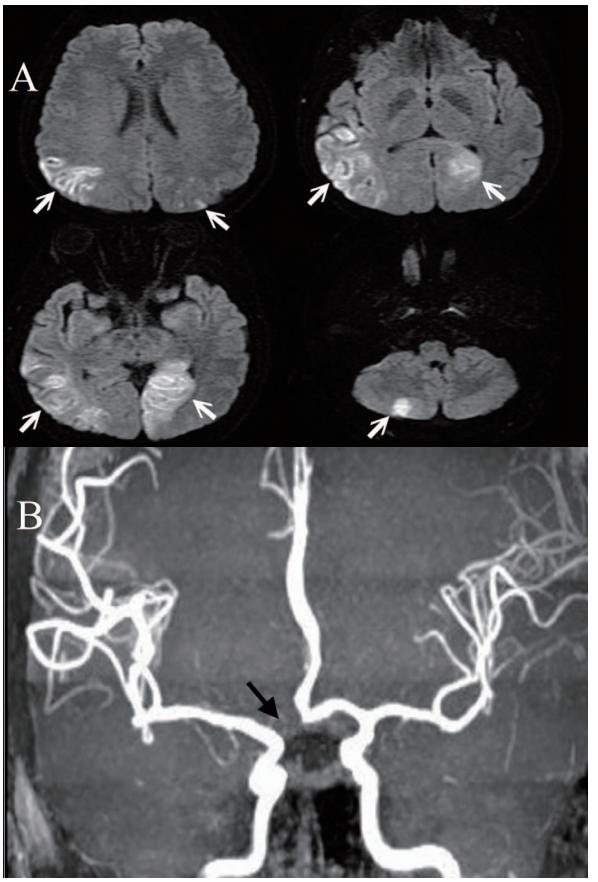

Fig.1. Magnetic resonance (MR) imaging of the patient.
(A).Diffusion weighted imaging of the brain shows multiple sites of acute brain infarctions, including the right frontal lobe, bilateral parietal and occipital and right temporal lobes, as well as the right cerebellum (white arrows). (B).On MR angiography coronal view of the basilar artery, the flow signal distal to the left P3 (black arrow) is not visualized.

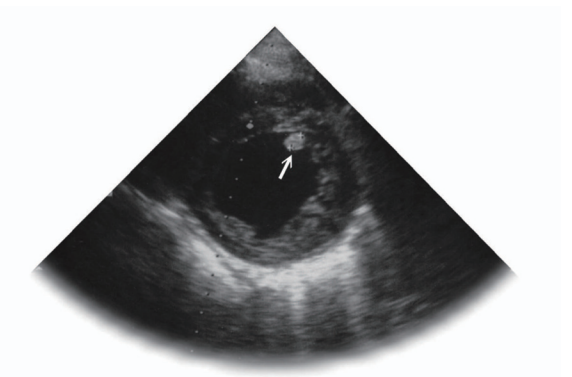

Fig.2. Initial transthoracic echocardiography of the patient.
Not a thrombus measured 1.0 x 1.4 cm near the apex of the left ventricle.

given orally per day was initiated to achieve target international normalized ratio (INR) of 2.5. Doppler examination of the bilateral carotid artery was normal. Blood cultures were all failed to yield any pathogens. Serologic surveys regarding young-stoke, including anti-nuclear antibody, rheumatoid factor and anti-cardiolipin IgG and IgM were all negative. The serum antithrombin III, protein C and protein S levels were normal. Cardiac catheterization with endomyocardial biopsy was not performed. He was discharged on the treatment of aspirin and wafarin on the 37th hospital day with retained visual field defect and impaired coordination. A serial echocardiographic follow-up showed improving of the LV EF from 15% to 40% and complete resolution of the thrombus. There was no evidence of interatrial aneurysm, LA thrombus or patent foramen ovale. On follow-up at 6 months, the LVEF was 45%. There was no detectable intracardiac thrombus and oral anticoagulant was discontinued. However the visual field defect persisted.

Discussion

This young man had GTCS and postictal confusion as the initial manifestations of acute DCM complicated with LV thrombus and multiple acute brain infarctions. Although the etiology of DCM could not be ascertained in this patient, recent flu-like symptoms and subsequent fatigue and exercise intolerance suggest the possibility of viral myocarditis and the evolution to clinically significant acute DCM. The incidence of LV thrombus in patients with cardiomyopathy has been reported up to 11 to 44%1. From the prospective of chronology, i.e., acute onset without prodrome, as well multiple sites of brain infarction rather than meningeal enhancement in MR imaging, concurrent myocarditis with central nervous infection (encephalitis) from the same viral etiology was less likely. GTCS and postictal confusion as the initial manifestations of recent-onset DCM complicated with LV thrombus and multiple sites of acute brain infarctions had not been reported before. We believe that multiple infarctions and subcortical involvement were the causes of seizure attack in this patient. Management of this patient was complicated by seizure at the onset of stroke and the finding of LV thrombus.

DCM can result from idiopathic, genetic, viral, immune or toxic etiology. It has been suggested that myocarditis and cardiomyopathy could be the two phases of the same disease[1]. DCM is associated with an increased risk of thromboembolism because of low output status, relative stasis of blood in a dilated chamber, and altered coagulation status[2]. Increased platelet activation, thrombin activation and fibrinolytic activity can be observed in patients with DCM[3]. Mural thrombus is more frequently observed in the LV than in the LA[1]. Although the annual risk of thromboembolism in these patients is relatively low, many patients with DCM are young and are exposed to an appreciable cumulative risk of systemic embolization[4]. Endomyocardial biopsy may be used for patients with acute DCM associated with hemodynamic compromise, those with life-threatening arrhythmia, and those whose condition does not respond to conventional supportive therapy. The recommended indications for anticoagulation in most patients with DCM are atrial fibrillation, a previous thromboembolic event and LV thrombus[5].

The incidence of young stroke was 6.8% of all strokes[6]. In general, diabetes, hypertension, heart disease, current smoking, illicit drug use and long-term heavy alcohol consumption are major risk factors for stroke in young adults[7,8]. The etiologies of young stroke can be different between countries, i.e., the most common cause of stroke in Iranian young adults was rheumatic valvular heart disease; nonetheless, increased homocysteine level is strongly associated with the risk of stroke in young

Asian adults[9-11]. In patients 15 to 35 years of age, dissection, cardioembolism, nonatheroslerotic vasculopathies, and prothrombotic states are the major causes. In adults over 35 years of age, atherosclerotic risk factors are predominant for acute ischemic stroke (AIS)[8]. Cardioembolism accounted for 14 % to 32.7 % of AIS in young age. The overall prognosis of AIS in young adults is good[12].

Early seizures are more frequent in hemorrhagic strokes, disabling ischemic strokes, severe or large area of infarction, as well those with cortical involvement or cortical infarctions extending to subcortical structures[13]. The reported rate of early seizure, defined as those occurring within 7 days from the onset of AIS had ranged from 2 to 8.6 %[14-16]. Factors associated with the development of early seizure can be classified as primary neurologic origins and secondary insult, such as cerebral hypoperfusion or hypoxia. The risk of epilepsy is higher for patients with early seizures or cortical infarctions and in severely handicapped patients[17]. Although status epilepticus remains a life-threatening and often fatal event, neither early nor late seizures appear to have a significant impact on mortality; but in the immediate poststroke period might worsen outcome[18,19]. Because it is difficult to differentiate AIS from postictal Todd paralysis by clinical examination and brain CT scan, seizure with postictal residual neurologic impairment is a main contraindication to intravenous thrombolysis in patient with AIS. These patients can still be treated with intravenous thrombolysis once ischemic stroke is confirmed by other adjunctive imaging modalities, such as perfusion MR imaging, perfusion CT or CT angiography[20-22].

It is known that atrial fibrillation, embolic cardiopathies and total anterior circulation infarction were independent predictors of cardioembolic stroke[23]. Secondary to atrial fibrillation, cardiomyopathy and a low EF are the leading cause of cardioembolic ischemic stroke. Thus, early identification of cardioembolism by echocardiography has been proposed to alter the treatment strategy. In a prospective study evaluating 435 patients with AIS in sinus rhythm, the use of TEE had classified 37.2% of patients to have potential benefit from anticoagulation therapy; of which, DCM accounted for 19.1% of cases[13].

Since echocardiography may not be available all the time, the use of serum markers to differentiate the etiology of AIS has been proposed to facilitate the diagnosis of cardioembolic stroke and rapidly guiding other diagnostic tests and accelerating the start of optimal secondary prevention. Significantly elevated plasma BNP level (over 140.0 pg/mL) had been found in cardioembolism patients than in other stroke subtypes in patients with AIS; even among patients with transient symptoms, a high BNP level identified cardioembolic etiology[23,24]. Pro-BNP levels higher than 360 pg/mL are associated with cardioembolic stroke and may be useful to reclassify undetermined strokes as of cardioembolic origin[25]. In addition, elevated soluble receptor for advanced glycation end products and D-dimer had also been observed in patients with cardioembolic stroke[23].

Emergent management of a young patient who had GTCS as the initial presentation of AIS and DCM with LV thrombus can be management dilemma. Meta-analysis studies have found that death and disability is not reduced by early anticoagulant treatment in patients with AIS presumably as a result of cardioembolism[26]. Reports regarding the use of intravenous thrombolysis in AIS patients with cardioembolism were limited. Although cardioembolism is not an established contraindication to intravenous thrombolysis, the fact that the drug could further accelerate break-up of the cardioembolism remains to be a concern. Recurrent cerebral thrombus, embolic myocardial infarction and lower limb embolism had been

reported in patients with cardioembolism treated with intravenous thrombolysis[27,28].

The prescriptions of secondary prevention must be weighed against the risk of bleeding. The American Heart Association/American Stroke Association Writing Committee for the prevention of Stroke in patients With Stroke and Transient Ischemic Attack has updated their recommendations as following. Aspirin (50 to 325 mg/day), the combination of aspirin and extended-release dipyridamole, and clopidogrel monththerapy are all acceptable options for initial therapy. Combination therapy of aspirin and clopidogrel is not routinely recommended for ischemic stroke patients[29]. Secondary prevention for patients with cardiomyopathy and reduced EF should include antiplatelet and possible vitamine K anticoagulant. It is reasonable to consider empirical anticoagulation in patients with transient ischemic attack or AIS in association with LV thrombus formation following myocardial infarction or in association with idiopathic dilated cardiomyopathy. If warfarin is prescribed, a target international normalized ratio of 2.5 (range 2-3) should be aimed[30,31]. The trial of warfarin, aspirin, and clopidogrel in patients with chronic heart failure (WATCH) had concluded that wafarin anticoagulation should be considered only in patients who have EF less than 20%, a prior stroke with reduced LVEF and the presence of thrombus in the ventricles[32,33].

In conclusion, GTCS and postictal confusion could be the initial manifestations of recently developed acute DCM complicated with LV thrombus and multiple sites of acute brain infarctions. This case highlights that physicians should have high alert to the underlying etiology of AIS in young patients. Additional imaging modalities and early echocardiography are necessary to justify the initiation of anti-coagulation therapy or thrombolytic therapy. Secondary prevention with dual antiplatelet or combination with anticoagulant should be used cautiously.

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癲癇後意識混亂爲表現的擴大性心肌病變併多發性急性缺血性腦梗塞：病例報告及文獻回顧

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摘 要

擴張性心肌病變易造成左心室的血栓進而發生栓塞徵候群，然以多發性急性缺血性腦梗塞併癲癇大發作及癲癇後意識混亂爲初期臨床表現則未被報導過。我們報告一位34歲男性，有左心室血栓以及同時併發多處急性腦血管阻塞，併發癲癇大發作。據文獻指出擴張性心肌病變患者易有左心室血栓，而且同時有更高產生血栓機會。年輕性腦中風的原因因地緣性以及年齡上的區別有明顯不同。急性缺血性腦梗塞發作七天內，有2~8%機會發生早期癲癇發作。臨床醫師首重在區分出癲癇後一過性麻痺與急性缺血性腦梗塞的不同，因爲前者是施打血栓溶解劑的絕對禁忌症。然而從臨床病史與電腦斷層上，兩者不易區分，建議配合灌流式電腦斷層、血管攝影、心臟超音波或核磁共振。如此才能判斷是否開始抗凝血或血栓溶解治療，且權衡長期使用雙重抗血小板或抗凝血劑治療可能造成出血體質之風險。