

Acute Ischemic Stroke Following Acute Myocardial Infarction: Adding Insult to Injury

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To the Editor: Concurrence of acute ischemic stroke and acute myocardial infarction (AMI) is rare but serious in clinical scenarios.^[1-3] Reperfusion therapy, with no or minimal delay, is optimized strategy to save both vital organs in such urgency. Here, we report a case of successful salvage with urgent thrombolysis plus carotid angioplasty, followed by elective percutaneous coronary intervention (PCI).

A 59-year-old male presenting sudden onset of severe chest pain was diagnosed as AMI in local hospital based on typical electrocardiogram change. After taking aspirin 100 mg, the patient was urgently transferred to our hospital. On arrival, his chest pain was obviously alleviated whereas concomitant complaint of transient dizziness with left hemiplegia was noticed. The vital signs were stable with pulse of 68 beats/min and blood pressure 112/72 mmHg. Cardiac troponin I level was elevated at 0.12 ng/ml (normal value, <0.02 ng/ml), in accordance with the mild elevated creatine kinase-MB. Transthoracic echocardiography showed the presence of anterior wall hypokinesis with reduced left ventricular systolic function (left ventricular ejection fraction 44%). Thereafter, computed tomography brain scan showed unremarkable signs. Since AMI was confirmed, whereas acute cerebrovascular disease could not be ruled out, the patient was admitted in cardiac intensive care unit.

Dual-antiplatelet therapy and anticoagulation was administered. However, sudden dizziness with left hemiplegia and dysphasia reoccurred 20 h later and exacerbated. The absence of right internal carotid artery and disappearance of right middle cerebral artery were found by emergency magnetic resonance angiography (MRA). Intravenous t-PA (0.9 mg/kg over 1 h, total dose 60 mg) was urgently administered. Meanwhile, cerebral angiography, performed by neurologists, showed severe stenosis of right carotid artery due to a huge atherosclerotic plaque.

Targeted angioplasty was successfully implemented with no stent implantation, considering no identifiable residue carotid stenosis. Then, the patient's neurological symptoms and signs

were relieved substantially. Given potential risk of bleeding poststroke, anticoagulation was withdrawn. Repeated brain MRA 24 h later showed acute lacunar infarction of right basal ganglia. On the 8th day after admission, coronary angiography (CAG) was performed to evaluate coronary vasculature, showing mild stenosis in right coronary artery, whereas 50–60% stenosis in left anterior descending artery (LAD) and chronic occlusion of distal left circumflex artery (LCX). Interestingly, the reverse perfusion of remote LAD toward LCX indicated that LAD was the culprit vessel. Given the acute phase of stroke and no proof of progressive cardiac ischemia, PCI was electively performed 3 months post-MI, implanting a stent in LAD and two stents in LCX, respectively.

In our case, AMI and concomitant stroke were huge challenges in urgency, since either myocardium or cerebrum is sensitive and fragile to hypoxia. In such urgency, instant reperfusion therapy is optimized to save both vital organs, while maintaining the delicate balance between ischemia and bleeding is equally crucial. Individualized evaluation and interdisciplinary cooperation are critical to make life-saving treatment.^[4]

Through performing angiography, we clinically inferred that primary AMI was due to acute thrombosis at LAD, whereas concomitant stroke was caused by both severe stenosis of carotid artery and procoagulant state of preceding AMI.^[5] Since relief of the chest pain indicating spontaneous recanalization of coronary artery, thrombolysis and mechanical angioplasty were implemented to save the ischemic brain. Elective CAG and PCI were reasonable and beneficial for revascularizing coronary system.

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Received: 04-01-2017 **Edited by:** Yi Cui

How to cite this article: Cai XQ, Wen J, Zhao Y, Wu YL, Zhang HP, Zhang WZ. Acute Ischemic Stroke Following Acute Myocardial Infarction: Adding Insult to Injury. Chin Med J 2017;130:1129-30.

Access this article online

Quick Response Code:



Website:
www.cmj.org

DOI:
10.4103/0366-6999.204921

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Acknowledgments

We especially thank Dr. Li Teng from Department of Pathology, Air Force General Hospital for manuscript preparation.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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