Intravenous Thrombolysis in a Severely Thrombocytopenic patient with Internal Carotid Artery Dissection

Jianping Yu1, Danni Zheng2,3, Fan Xu4, Dengfu Yan1 and Jie Yang1*
1Department of Neurology, The First Affiliated Hospital of Chengdu Medical College, China
2Centre for Big Data Research in Health, University of New South Wales, Australia
3The George Institute for Global Health, University of New South Wales, Australia
4Department of Public Health, Chengdu Medical College, China

Abstract

Background: Thrombocytopenia is considered an absolute contraindication for Intravenous Thrombolysis (IVT), according to trial selection criteria and expert opinions. Cases of stroke patients with mild thrombocytopenia who received IVT were occasionally reported, but reports of patients with platelet count below 80,000/µL are scarce.

Case Presentation: We report an ischemic stroke patient with a platelet count of 56,000/µL who received IVT. The patient did not have any hemorrhagic symptoms before stroke and no symptomatic hemorrhagic complications after IVT. The stroke was caused by internal carotid artery dissection, and stenting of the right internal carotid artery was performed to prevent cerebral infarction recurrence.

Conclusion: This case exemplifies the need to reassess the threshold of platelet count for withholding intravenous thrombolysis. We often encounter cases with management uncertainties, having no available high-quality evidence. In these cases, clinical decisions must be made on an individual basis.

Keywords: Thrombocytopenia; Acute ischemic stroke; Intravenous Thrombolysis; Tissue plasminogen activator

Background

Intravenous Thrombolysis (IVT) with alteplase is approved for Acute Ischemic Stroke (AIS) patients. Nevertheless, IVT use is limited not only by its short therapeutic window, but also by the numerous contraindications. Having a platelet count of less than 100,000/µL is considered an absolute contraindication for IVT, according to trial selection criteria and expert opinions [1]. As unsuspected thrombocytopenia is rare, the 2013 American Heart Association/American Stroke Association (AHA/ASA) guidelines recommend clinicians not to wait for the platelet count results before administering intravenous alteplase to AIS patients unless there is a suspected bleeding artery dissection, and stenting of the right internal carotid artery was performed to prevent cerebral infarction recurrence.

Conclusion: This case exemplifies the need to reassess the threshold of platelet count for withholding intravenous thrombolysis. We often encounter cases with management uncertainties, having no available high-quality evidence. In these cases, clinical decisions must be made on an individual basis.

Keywords: Thrombocytopenia; Acute ischemic stroke; Intravenous Thrombolysis; Tissue plasminogen activator

Case Presentation

A 57-year-old male patient with a history of hypertension presented with left-sided weakness and transient loss of vision in the right eye for the past three hours. The patient denied any neck pain or trauma. Vital signs were notable for a blood pressure of 163/88 mmHg and a heart rate of 58 bpm. Neurological examination revealed left-sided central facial palsy, left hypoglossal nerve palsy, left limb weakness, and left Babinski sign with a National Institutes of Health Stroke Scale (NIHSS) score of 4. Head Computed Tomography (CT) showed no evidence of acute stroke.
patient was given IVT with alteplase immediately after physical examination at 3.5 h from symptom onset, without waiting for blood test result (which later revealed a platelet count of 56,000/µL). After IVT, the symptom of left-side facial palsy and hemiplegia disappeared with an improvement of NIHSS score to 0, but a partial right-side Horner’s syndrome with right mitosis and right ptosis was observed. To clarify the cause and artery stenosis, the patient had brain Magnetic Resonance Imaging (MRI) and cerebral Digital Subtraction Angiography (DSA) at 24 hr after symptom onset. MRI showed AIS in the head of the right anterior limb of the internal capsule (Figure 1). DSA disclosed mild stenosis and dissecting aneurysm in the initial position of the right Internal Carotid Artery (ICA) (Figure 2). The dissecting aneurysm was confirmed by cervical Magnetic Resonance Angiography (MRA) (Figure 3). 24 hr after IVT, anti-platelet therapy was strengthened with 100 mg of aspirin and 75 mg of clopidogrel per day for 3 months. Subsequently, stenting of the right ICA was performed to avoid recurrence of cerebral infarction. The Horner’s syndrome disappeared, and the blood flow of right ICA normalized after the stenting (Figure 2). The patient had later resumed work without neurological deficits after being discharged. Three months later the platelet count had increased to 88,000/µL and anti-platelet therapy was changed to aspirin 100 mg daily for lifelong.

Discussion and Conclusion

Prior studies reported the rate of having unsuspected platelet count of less than 100,000/µL at stroke presentation to be only 0.3% [3,4]. However, both of these studies were conducted in the U.S population and excluded known thrombocytopenia patients. Another Chinese study showed that having a platelet count of below 100,000/µL was common in Southwestern part of China, such as Chengdu [5]. The mechanism leading to normalization of platelet count after stroke in our patient with thrombocytopenia was unclear. It is possible that thrombocytopenia was acutely caused by stroke. More detailed investigation is needed on the incidence of thrombocytopenia in...
Chinese stroke patients.

Platelet count is associated with the risk of bleeding. Generally, those with platelet counts between 30,000 and 50,000/µL may note easy bruising, whereas platelet counts above 50,000/µL are usually discovered incidentally [6]. Considering the risk of bleeding complications, thrombocytopenic patients are usually excluded from IVT and hence there is very limited data regarding the safety of IVT in thrombocytopenic stroke patients. Whether a platelet count of 100,000/µL is a justified threshold for withholding IVT remains unclear. We often encounter cases with uncertainty regarding management, for which high-quality data are not available. For these cases, clinical decisions must be made on an individual basis. Based on the scanty literature available on this subject, we would recommend thrombolytic therapy for an ischemic stroke patient with a platelet count of between 50,000/µL and 100,000/µL, provided there is no evidence of a bleeding diathesis.

Grants Details

i) Clinical Vascular Grant In Chinese Physician (No. 2017-CCA-VG-029); ii) Independent Fundation of the First Affiliated Hospital of Chengdu Medical College (No. CYFY2017DL06); iii) National Natural Science Foundation of China (No. 81870940); iv) Sichuan Science and Technology Program (No. 2018Y0026)

References