DOI: 10.4274/Tnd.77044

Case Report / *Olgu Sunumu*

From Bad to Worse: Intravenous Thrombolysis in Tandem Occlusion

Yağmurdan Kaçarken Doluya Tutulmak: Tandem Oklüzyon ve Intravenöz Tromboliz

Serdar Tütüncü, Annerose Ziegler, Jochen Fiebach*, Heinrich Audebert, Christian Nolte*

Charite University Hospital, Department of Neurology, Berlin, Germany

**Center For Stroke Research - Charite, Berlin, Germany*

Summary

We report a stroke patient with tandem occlusion of both the distal middle cerebral artery (MCA) and the ipsilateral internal carotid artery (ICA) who deteriorated clinically after intravenous thrombolysis in spite of recanalization of the ICA because of new proximal MCA (main-stem) occlusion. We discuss this unfortunate course (clinical deterioration in spite of partial recanalization) in the light of the characteristics of human brain vasculature and argue in favour of a more aggressive reperfusion strategy in this particular setting. *(Turkish Journal of Neurology 2012; 18:173-174)*

Key Words: Stroke, tandem occlusion, iv thrombolysis

Özet

Bu olgu sunumumuzda distal orta serebral arter ve ipsilateral internal karotis arter tıkanıklığı (tandem oklüzyon) olan ve iskemik inme geçiren hastamızın intravenöz tromboliz uygulandıktan sonra internal karotis arter tıkanıklığının giderilmesine rağmen yeni proksimal serebral orta arter tıkanıklığı oluştuğundan semptomlarının ağırlaştığını bildiriyoruz. Bu talihsiz seyri serebral arterlerin intrakranyal bölümdeki seyirleri ile ilişkili olarak değerlendirdikten sonra böyle özel durumlarda intravenöz trombolize ek olarak intravasküler terapi kullanarak daha iyi sonuçlar elde edilebileceğini tahmin ediyoruz. *(Türk Nöroloji Dergisi 2012; 18:173-174)*

Anahtar Kelimeler: Beyin felci, tandem oklüzyon, intravenöz tromboliz

Introduction

Defining the cerebrovascular status is not a prerequisite for starting IV thrombolysis in patients with acute ischaemic stroke although localisation of vessel occlusion is associated with recanalization rate and clinical outcome (1,2,3). Recanalization rate is higher in distal than in proximal middle cerebral artery (MCA) occlusions and in MCA occlusions than in internal carotid artery (ICA) occlusions (1,2,3). In addition, MCA main-stem occlusions recanalize less frequently if an additional proximal (ipsilateral) ICA occlusion is present. ICA occlusion alters hemodynamic conditions, thereby reducing exposure to the thrombolytic agent (4).

It is an unsolved controversy, whether acute ICA occlusions (with or without additional ipsilateral MCA occlusion) should be treated more aggressively than MCA occlusions alone.

Case Report

A 75-year old man with atrial fibrillation but without oral anticoagulation suddenly developed an unsteady gait and a slurred speech. On admission, neurological examination revealed dysarthria, facial palsy and a left sided hemiparesis (NIHSS 5). Initial MRI revealed diffusion restriction in the right MCA territory and MR angiography demonstrated

Address for Correspondence /Yazışma Adresi: Serdar Tütüncü MD, Charite University Hospital, Department Of Neurology, Berlin, Germany
Phone.: 00493084454285 E-mail: serdar.tuetuencue@charite.de

Received/Geliş Tarihi: 1.07.2012 **Accepted/Kabul Tarihi:** 30.09.2012

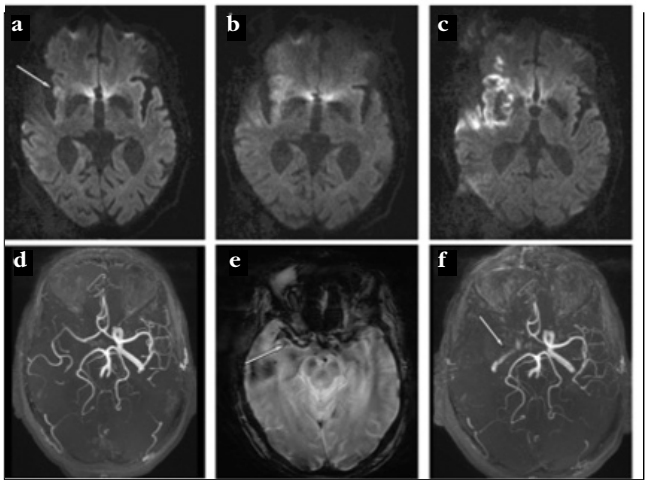

Figure 1. Imaging findings (MRI, 3 tesla TimTrio, Siemens) before thrombolysis **(a+d)**, immediately after clinical worsening **(b+e)** and the following day **(c+f)**. **a:** DWI hyperintensity on admission. **b:** Enlargement of the DWI hyperintensity. **c:** Known enlargement of DWI hyperintensity and hemmorhagic transformation. **d:** MR-A shows tandem occlusion of ICA and one M2 segment. **e:** T2* shows new MCA main-stem-clot. (MRA is of poor quality due to movement artefacts.) **f:** MR-A shows partial recanalisation of ICA and MCA-main-stem-occlusion

occlusions of both the proximal ICA and a branch of the ipsilateral (distal) MCA. Intravenous (iv) thrombolysis was started 120 minutes after symptom onset. Dysarthria and left hemiparesis increased within half an hour and the patient showed an additional head and gaze deviation (NIHSS 18). Thrombolysis was stopped. Prompt MRI did not show intracerebral haemorrhage but recanalization of the ICA. Worsening was explained by a new right MCA main-stem occlusion and corresponding enlargement of diffusion restriction (Figure 1). Neurological deterioration remained the same. The patient had a cardiac arrest on the same day and later, he suffered a fatal mesenterial infarction.

Discussion

The decision to treat our patient with iv thrombolysis was based on data demonstrating good recanalization rates in patients with distal MCA-occlusion and additional ipsilateral ICA occlusion (4). Recanalization may be incomplete more often in this special setting, but even partial recanalization is associated with a better prognosis than persistent occlusion (5). Decrease in clot size might dislocate the thrombus into a more distal vessel branch, but this will normally go along with a reduction of brain tissue damage and clinical improvement. Our report illustrates the inherited risk caused by the characteristics of human brain vasculature. The presence of collateral flow can ensure blood supply distal and ipsilateral to an ICA occlusion. In this particular situation the hemodynamic condition deteriorates if the MCA main-stem gets occluded although the ICA recanalizes due to disruption of collateral flow by clot migration or new clot formation. We argue that an endovascular procedure would have allowed elimination of clot material and immediate control of therapy success would have been possible. If a thrombus within the ICA was dislocated distally, extension of the intra-arterial procedure to the MCA main-stem could have been conducted. However, the new MCA main-stem occlusion may also have resulted from a cardiogenic source.

References

1. Rha J, Saver JL. The impact of recanalization on ischemic stroke outcome: a meta-analysis. Stroke 2007;38:967-73.
2. Zangerle A, Kiechl S, Spiegel M, Furtner M, Knoflach M, Werner P, et.al. Recanalization after thrombolysis in stroke patients: predictors and prognostic implications. Neurology 2007;68:39–44.
3. Silva DA de, Brekenfeld C, Ebinger M, Christensen S, Barber PA, Butcher KS, et al. The benefits of intravenous thrombolysis relate to the site of baseline arterial occlusion in the Echoplanar Imaging Thrombolytic Evaluation Trial (EPITHET). Stroke 2010;41:295-9.
4. Rubiera M, Ribo M, Delgado-Mederos R, Santamarina E, Delgado P, Montaner J, et al. Tandem internal carotid artery/middle cerebral artery occlusion: an independent predictor of poor outcome after systemic thrombolysis. Stroke 2006;37:2301-5.
5. Neumann-Haefelin T, Du Mesnil Rochemont R de, Fiebach JB, Gass A, Nolte C, Kucinski T, et al. Effect of incomplete (spontaneous and post-thrombolytic) recanalization after middle cerebral artery occlusion: a magnetic resonance imaging study. Stroke 2004;35:109–14.