



Therapeutic Effect of Thrombolytic Therapy on Motor Function Loss After Ischaemic Stroke: A Case Study

Trombolitik Tedavinin İskemik İnme Sonrası Motor Fonksiyon Kaybı Üzerindeki Terapötik Etkisi: Bir Vaka Çalışması

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ABSTRACT

Stroke is a serious cerebrovascular disease that can cause disability and death if not treated with appropriate treatment methods at the right time. In ischemic stroke, recombinant tissue plasminogen activator (rt-PA) treatment is effective in motor deficit recovery, especially in the first 4.5 hours. In this case study, rt-PA thrombolytic treatment of patients with motor deficit after acute ischemic stroke aged 58 and 79 years was found to improve the loss of motor function.

Keywords: Hypertension, stroke, thrombolytic treatment.

ÖZET

İnme, doğru zamanda uygun tedavi yöntemleri ile tedavi edilmediği takdirde sakatlık ve ölüme neden olabilen ciddi bir serebrovasküler hastalıktır. İskemik inmede, rekombinant doku plazminojen aktivatörü (rt-PA) tedavisi, özellikle ilk 4,5 saatte motor fonksiyon bozukluğunun iyileşmesinde etkilidir. Bu vaka çalışmasında, akut iskemik inme sonrası motor fonksiyon kaybı olan 58 ve 79 yaşlarındaki hastaların rt-PA trombolitik tedavisinin motor fonksiyon kaybını iyileştirdiği bulunmuştur.

Anahtar Sözcükler: Hipertansiyon, inme, trombolitik tedavi.

Introduction

Stroke is a serious health problem that occurs as a result of occlusion of vessels by a thrombus or embolus called ischemic stroke; or rupture of the vessel named as hemorrhagic stroke. Approximately %80-85 strokes are ischemic (1). Stroke cases occur in approximately 20 million people worldwide annually and result in death or disability (1, 2). Although hypertension, diet, alcohol, age, diabetes and gender are factors affecting stroke, it has been observed in recent years that stroke mortality has decreased and quality of life has increased due to the identification of risk factors and early and effective treatment (3). Since stroke causes psychosocial and economic problems on the individual, family and society, the treatment of stroke is important for both the individual and the society (2). The main aim of stroke treatment is to restore perfusion in the ischemic area, to prevent secondary damages that may occur after ischemia and to put forward treatment approaches that will accelerate the recovery of cases and reduce mortality. Antiaggregant, anticoagulant, thrombolytic, antiedema and neuroprotective agents are widely used in the treatment of cerebral ischemia in the clinic. In these case reports, a 79-year-old female patient with hypertension and a 58-year-old male patient with no known disease presented to the clinic with complaints of weakness in arms and legs and difficulty in speaking. After thrombolytic treatment, motor deficit of the patients resulted in complete recovery.

Cases

Case 1: 79-year-old female patient. She had no history of systemic disease other than hypertension and complained of weakness in the left arm and leg 1 hour ago. Neurological Examination: Pupillary light reflex (PIR): ++/++, Pupils: isochoric. Left central facial paralysis (MFP): (+). Floor skin reflex: left (+). Motor deficit: left 4/5 hemiparetic. Cerebellar tests: Normal. MRI diffusion scan revealed an acute infarct area at the level of the right basal ganglion (globus pallidus and putamen) (Figure I.A). No pathology was found in hemogram, biochemistry and INR tests. Thrombolytic treatment was initiated with the consent of the patient's spouse (0.9 mg/kg, 10% of which was given as a puff and the rest

as a 1-hour infusion). He was taken to intensive care unit for follow-up. After thrombolytic treatment, motor deficit resulted in complete recovery. Control computed tomography showed no hemorrhage, and the patient was transferred to the ward (Figure I.B). Electrocardiogram (ECG): Normal sinus rhythm. Ejection fraction on echo: 60%. Holter was recommended. Doppler ultrasound revealed no significant stenosis. She was discharged with the Holter result and neurology outpatient clinic was recommended. Written informed consent was obtained from the patient before thrombolytic treatment.

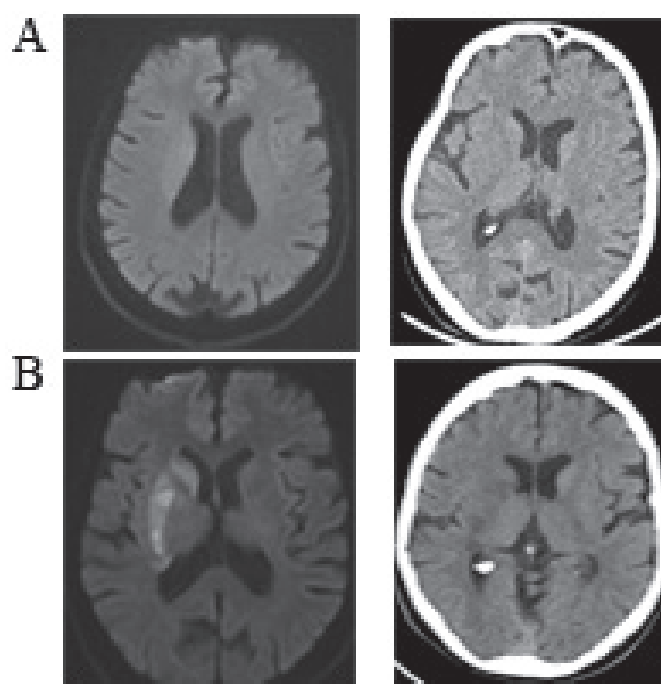


Figure I. A) Pre-operative MRI and CT B) Post-operative MRI and CT

Case 2: 58-year-old male patient. The patient had no known history of systemic disease and had sudden onset of weakness in the right arm and leg and difficulty in speaking 2 hours ago. Neurological Examination: pir:++/+++, pupils: isochoric. Left vulpian palsy (+). Right central facial paralysis (MFP): (+). Floor ciliary reflex: on the right (+). Motor deficit: right hemiplegia (+). Cerebellar tests: normal on the left, could not be evaluated on the right due to plegia. Diffusion MRI revealed diffusion limitation compatible with acute infarction in the cortex - subcortical grey matter in the anteromedial (parafalksian area) at the level of centrum semiovale in the frontal lobe in the

left hemisphere, in the frontal lobe in the anterior neighborhood of the central sulcus and in the cortex at the level of parietal lobe at the posterior level (Fig. II.A). No pathology was found in hemogram, biochemistry and INR tests. Thrombolytic treatment was initiated with the consent of the patient's spouse (0.9 mg/kg, 10% of which was given as a puff and the rest as a 1-hour infusion). He was taken to intensive care unit for follow-up. After thrombolytic treatment, motor deficit resulted in complete recovery. Right MFP persisted at a mild level. No hemorrhage was detected on control computed tomography and the patient was transferred to the ward (Fig. II.B). ECG: Normal sinus rhythm. Ejection fraction on echo: 60%. Holter was recommended. Doppler ultrasound revealed no significant stenosis. She was discharged with the Holter result and neurology outpatient clinic was recommended. Written informed consent was obtained from the patient before thrombolytic treatment.

cerebral blood flow falls below 10 ml/min per 100 g of brain tissue, necrosis rapidly starts to develop within seconds. This area can maintain its viability for approximately 4-6 hours and permanent damage can be prevented by reperfusion (5). Therefore, the main aim in the treatment of Acute Ischemic Stroke (AIS) is to minimize cell death and damage by providing reperfusion (6). Interventional therapies including intravenous thrombolytic and endovascular treatment, which are the main treatment modalities applied for this purpose, are time-dependent therapies. Intravenous thrombolytic therapy is one of the most important strategies to recanalize the occluded vessel and provide timely reperfusion in the acute phase of stroke. The efficacy of recombinant tissue plasminogen activator (rt-PA) treatment has been proven in patients with AIS presenting in the first 4.5 hours (5). After treatment, 30% of patients may recover with minimal sequelae or without sequelae in the third month of the disease (7). In this study, thrombolytic treatment resulted in complete recovery of motor deficit in two patients with acute ischemic attack who presented to the hospital with weakness in the arm and leg.

In conclusion, Thrombolytic treatment administered within the first 4 hours after an acute ischemic attack improved the loss of motor function. thrombolytic treatment is an effective treatment method especially in the first hours of ischemia.

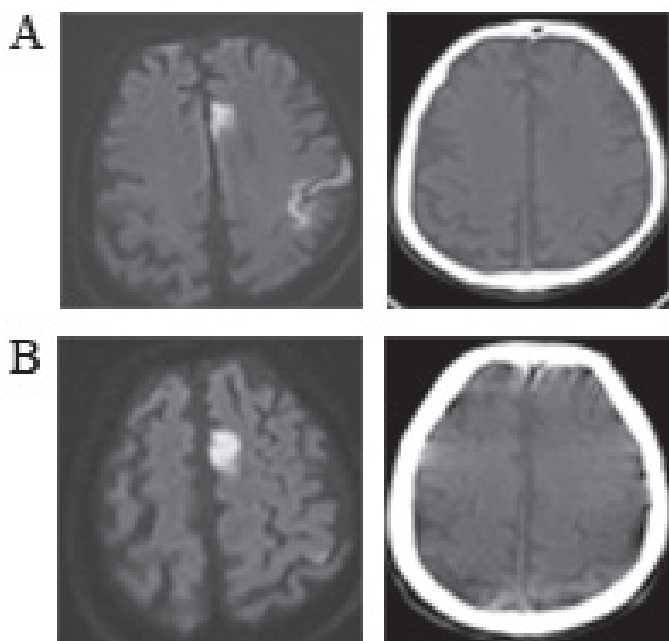


Figure II. A) Pre-operative MRI and CT B) Post-operative MRI and CT

Discussion

Stroke ranks third in terms of mortality and disability in the world after cardiovascular and cancer diseases (4). Approximately 87% of strokes are ischemic strokes (4). Ischemic stroke occurs as a result of occlusion of some or all of the vessels supplying the brain. If

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