

CASE REPORT

OLGU SUNUMU

MECHANICAL THROMBECTOMY IN PREGNANCY

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ABSTRACT

In recent years, data from several randomized clinical trials demonstrated a clear benefit of endovascular treatment in patients with acute ischemic stroke caused by a proximal vessel occlusion in the anterior circulation. Despite this, the benefit in some cohorts such as pregnant patients is not well known. Ischemic stroke in pregnancy relatively uncommon but it's result can be devastating for pregnant and fetus. Here we describe a case who is 32-year-old patient that develop ischemic stroke during first trimester pregnancy who was successfully treated with mechanical thrombectomy. We consider that mechanical thrombectomy is an important treatment option for pregnant patient with acute ischemic stroke.

Keywords: Mechanical thrombectomy, pregnancy, acute ischemic stroke.

GEBELİKTE MEKANİK TROMBEKTOMİ

ÖZ

Son yıllarda mekanik trombektomi büyük damardan kaynaklanan tromboembolik inmelerin tedavisinde oldukça etkin bir tedavi olarak ortaya çıkmıştır. Buna rağmen gebelik gibi bazı hasta gruplarında etkinliği tam olarak bilinmemektedir. Burada 32 yaşında ilk trimester gebeliği olan, inme geçiren ve başarılı bir trombektomi ile tedavi edilmiş hasta sunulmaktadır. Mekanik trombektominin gebe akut iskemik inmeli hastaların tedavisinde önemli bir tedavi seçeneği olduğu düşüncesini paylaşmaktayız.

Anahtar Sözcükler: Mekanik trombektomi, gebelik, akut iskemik inme.

INTRODUCTION

Among the etiological causes of ischemic stroke in pregnant, there are cardioembolic, intracranial or extracranial artery dissection, cerebral vein thrombosis, reversible cerebral vasoconstriction syndrome, peripartum cerebral angiopathy, posterior reversible encephalopathy syndrome (1). Randomized clinical studies conducted in recent years have shown the effectiveness of mechanical thrombectomy in acute stroke due to major vascular occlusion (2, 3), however, there is no certain information on the approach to pregnant patients in the guidelines. In the literature, as in very few numbers and case reports, mechanical thrombectomy was applied in the treatment of acute stroke due to large vessel obstruction during pregnancy. In this article, how to manage the diagnosis and treatment of pregnant case with ischemic stroke is discussed.

CASE REPORT

Thirty-two years old pregnant, has suddenly stopped talking while talking on the phone at home, developed deformity in her mouth and weakness on her right side. The patient was brought to the emergency room by ambulance. In the emergency neurological examination; the patient was awake, motor aphasic, and the right nasolabial fold was faint. Muscle strength was 2/5 on the right upper and lower extremities and Babinski sign on the right lower extremities was observed. The application National Institute of Health Stroke Scale (NIHSS) score was 14. The beta hCG in the emergency room was 10.007 mIU/ml and this value was compatible with the 5-6th gestational week. In the magnetic resonance imaging (MRI), the lesion observed in the left striatocapsular area was compatible with acute infarction (Figure Ia-d).

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The patient was taken to the angio room at the second hour of onset of the symptom, with the suspicion of major vascular occlusion due to the high NIHSS score at admission. Digital subtraction angiography (DSA) showed occlusion in proximal of the left middle cerebral artery (OSA) M1 (Figure IIa). The patient was given 2500 units of unfractionated heparin intra-arterially. The 8F balloon catheter (Corail, Balt, Montmorency, France) was placed at the proximal of the left internal carotid artery. Thrombus was passed with microcatheter (Vasco 21, Balt, Montmorency, France) under the guidance of micro guide wire (Hybrid, 0.014 inch, USA). With the withdrawal-stent (Catch 4x20mm, Balt, Mont morency, France), the vessel was recanalized at the second withdrawal (Figure IIb). While the stent was withdrawn and after the withdrawal, aspiration was performed manually from the guiding catheter with a 50-cc locked syringe. In the left OSA upper-division, there was a mild stenotic appearance, which we thought to be vasospasm, and the cerebral ischemia (mTICI) score of modified treatment was 3. The time between groin entry and recanalization time was one hour. On the first day, the patient's general condition was good and vital signs were stable. On the control brain tomography (CT) taken at the 24th hour, hypodensity in the left basal ganglia region and a hyperdensity that could be called as a spot was observed within. On the second day, pregnancy was terminated in line with the preference of the family. In the 72nd hour, the patient was mobilized and could walk independently in the service. Transthoracic and transesophageal echocardiographies performed for etiological research and holter results and vasculitis markers were normal. There was no feature in thrombophilia panel except MTHFR C677T homozygous positivity. In the control MRI performed on the 12th day, it was observed that the areas seen in the first diffusion MRI did not grow, however, maintained its presence (Figure IIIa-b). On magnetic resonance angiography (MRA), it was observed that the openness of left OSA and its branches continued (Figure III c-d). Among the cancer markers, Ca 125:168 (Normal: 0-35 IU/ml) were found to be higher; however, it was found to be normal in the follow-up. Since no was detected in the etiology, the patient was discharged with dual antiaggregant therapy. At discharge, mRS was 0. Informed consent was filled out by the patient for this paper.

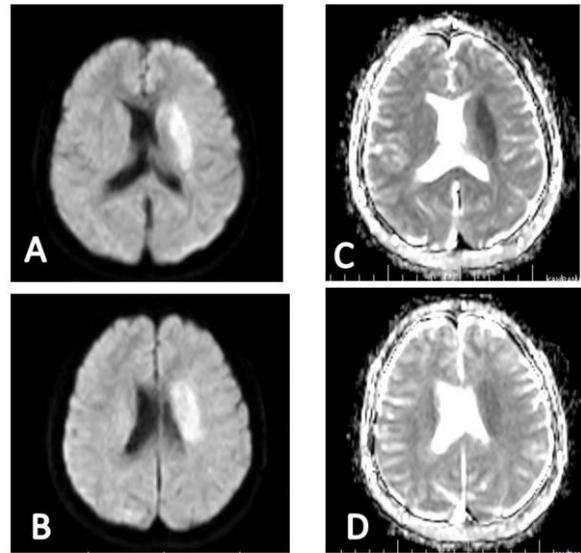


Figure Ia-d. In diffusion (b: 1000 s/mm²) weighted images (a-b) on the MRI taken at the time of application, hyperintensity in the centrum semiovale of the left basal ganglia, and hypointensity in the ADC map (c-d).

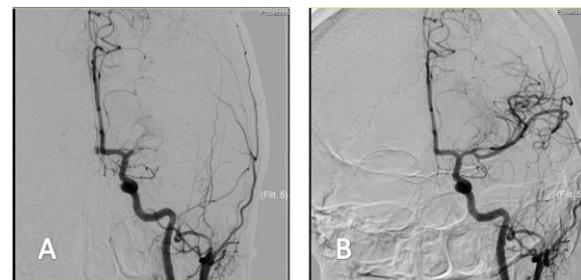


Figure IIa-b. Occluded in the DSA, in the left OSA M1 proximal (a); and post-procedure mTICI: 3 recanalization (b).

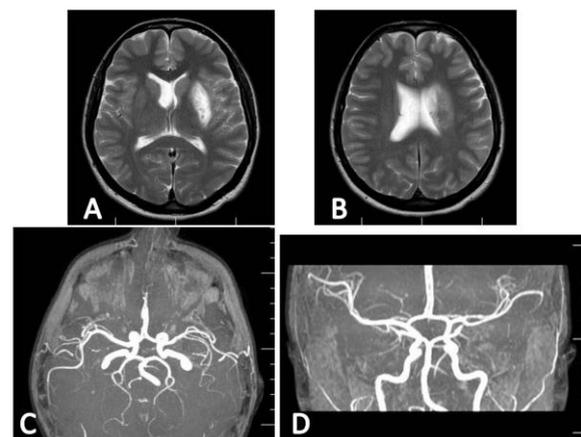


Figure IIIa-d. Although MRS: 0 at the time of discharge in 12 days, it was observed in the control MRG FLAIR sequences (a-b) that the observed damage at the first arrival continued, and in MRA (c-d) no problem was observed in the recanalized left OSA.

DISCUSSION AND CONCLUSION

Stroke in pregnant women is a rare condition that occurs in 30 of 100.000 people. The risk of stroke during pregnancy is 3 times more common than people of the same age. The third trimester during pregnancy is the period when the risk of stroke is high (4). When ischemic stroke develops during pregnancy, the diagnosis method (especially in the first trimester) and treatment and their effects on the fetus make this issue very important. It is necessary to cover the womb with radiation-protective lead vests and to reduce the exposure of the fetus. Although the radiation dose to be exposed by the child in the non-contrasted CT is low, this dose increases with CT and/or tomography angiography with contrast, and this ratio increases even more with the performed perfusion CT to demonstrate the presence of penumbra (5,6). It has been suggested that the use of MRI without gadolinium is safer during pregnancy, and if the expected benefit is higher, gadolinium can be given (7). As we did in our patient, it may be a more correct approach to follow a way based on MRI in pregnant women. Due to diffusion-weighted MRI images and NIHSS height mismatch in our patient at admission, she was taken directly to the angiography unit. With DSA, the procedure was tried to be concluded with the smallest possible dose and the baby was tried to be protected by placing a lead vest on the mother's womb.

In pregnant women who developed a stroke, intravenous (IV) recombinant tissue plasminogen activator (r-tPa) was previously considered contraindicated as there was not enough data. However, due to its effect on clinical outcome in the following years, it has been suggested that alteplase can be given (Relative contraindicated). Alteplase is a molecule with large molecular weight (59,000 daltons), meaning that the risk of intracranial or systemic bleeding (uterine bleeding in pregnant women) is not expected in the child, since it does not pass from the placenta to the child (4). It has been reported that there is no statistical difference between symptomatic bleeding rates between pregnant and non-pregnant patients (4).

Cases with stroke and underwent mechanical thrombectomy during pregnancy were reported as rare. Bhogal et al. (8) have presented two cases who underwent mechanical thrombectomy in the

second trimester, and Aaron et al. (9) have presented two cases who underwent mechanical thrombectomy in the third trimester, and both have reported the mRS score in cases with normal vaginal delivery in the third month as 0-2. Thrombolytic therapy was not given in these four cases.

In the recently published Canadian guideline, they have suggested that mechanical thrombectomy can be performed in strokes due to major vascular occlusion in pregnant women (without giving IV rtPa if the stroke clinic is serious). They also have suggested that the protective shield should be used, and X-ray application form and angle should be adjusted accordingly to protect the fetus during the procedure (4). In our case, the patient was taken to angio suite before IV rtPA was started.

We suggest that mechanical thrombectomy can be performed without giving IV rtPa if the stroke clinic is severe in acute stroke due to major vascular occlusion. If the clinic is not severe and in the appropriate treatment window, we suggest that mechanical thrombectomy can be performed by combining with IV rtPa. We also recommend diluting the contrast agent and using it as little as possible to protect the fetus from the contrast agent during the procedure. In order to protect the fetus from radiation, we recommend placing a protective shield on the mother's abdomen and giving the X-ray by adjusting the tube part of the device in a way that it will remain under the device table as much as possible.

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Ethics

Informed Consent: Informed consent form was signed by the patient.

Copyright Transfer Form: Copyright Transfer Form was signed by all authors.

Peer-review: Internally peer-reviewed.

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