Official Journal of Erciyes University Faculty of Medicine

DOI: 10.14744/cpr.2026.86232
J Clin Pract Res 2026;48(0):0–0

Intravenous Thrombolysis for Stroke in First-Trimester Pregnancy: A Case Report

Yasemin Ünal,[1] Duygu Yazgın Çilenger,[2] Özcan Kocatürk[3]

[1]Department of Neurology, Bandırma Onyedi Eylül University, Balıkesir, Türkiye
[2]Department of Neurology, Bandırma Training and Research Hospital, Balıkesir, Türkiye
[3]Department of Neurology, Balıkesir Atatürk City Hospital, Balıkesir, Türkiye

ABSTRACT

Background: The use of thrombolytic therapy during pregnancy remains a source of concern and stress. In pregnant patients who meet the criteria, thrombolytic therapy is recommended when the expected benefits outweigh the risks.

Case Report: A 33-year-old pregnant woman in her first trimester presented with an acute-onset impairment of speech and comprehension. Her initial National Institutes of Health Stroke Scale score was 4. Diffusion MRI was compatible with cortical-subcortical acute ischemia in the left frontotemporal region. Intravenous thrombolytic therapy was administered to the patient who met the criteria for thrombolysis. No bleeding or other complications were observed after treatment. On examination, after one week, all symptoms had completely resolved. The pregnancy ended in fetal abortion at 16 weeks; the cause was not determined.

Conclusion: Publication of case reports on the complications and efficacy of IVT during pregnancy is important, since there are no controlled studies of thrombolytic therapy in pregnant women.

Keywords: Cerebrovascular disease, intravenous thrombolysis, pregnancy, recanalization therapy, stroke.

Cite this article as:
Ünal Y, Yazgın Çilenger D, Kocatürk Ö. Intravenous Thrombolysis for Stroke in First-Trimester Pregnancy: A Case Report. J Clin Pract Res 2026;48(0):0–0.

Address for correspondence:
Yasemin Ünal
Department of Neurology, Bandırma Onyedi Eylül University, Balıkesir, Turkiye
Phone: +90 505 255 34 35
E-mail: yaseminunal95@yahoo.com

Submitted: 11.05.2025
Revised: 13.10.2025
Accepted: 10.02.2026
Available Online: 20.04.2026

Erciyes University Faculty of Medicine Publications - Available online at www.jcpres.com

INTRODUCTION

Acute cerebrovascular disease is a rare condition in pregnancy, however, it can have serious consequences such as maternal death or disability.[1,2] The most common cause of disability following pregnancy is cerebrovascular disease.[3] Prothrombotic state, gestational diabetes, eclampsia, and pre-eclampsia in pregnancy increases the risk of cerebrovascular disease in addition to other known vascular risk factors.[2,3]

Intravenous thrombolysis (IVT) is the current recommended treatment for ischemic stroke in eligible patients.[4] Managing stroke treatment during pregnancy is stressful. Due to the lack of randomized controlled studies involving pregnant patients, there is limited knowledge about the safety and effectiveness of thrombolytic therapy.[4-6] Concern about damage to the fetus or mother may cause physicians to avoid thrombolytic therapy.[7] It is important to publish case reports and complications or efficacy of IVT in pregnancy to ensure additional information and to provide resources for retrospective studies.[6,8]

CASE REPORT

A 33-year-old woman at six weeks' gestation presented to the emergency department with sudden-onset slurred speech, word-finding difficulty, and impaired comprehension that began 80 minutes earlier. Her vital signs were stable, with a blood pressure of 100/70 mmHg. Aside from mild mixed aphasia and slight dysarthria, neurological examination revealed no other findings, such as cranial nerve disorder or paralysis; the National Institutes of Health stroke score was 4.

Her medical history included hypothyroidism, but no known vascular risk factors were present. The standard electrocardiogram was normal. Laboratory parameters did not demonstrate any abnormalities, including a platelet count of 245 $\times 10^3$/µL, a partial thromboplastin time (aPTT) of 32.6 s, a prothrombin time of 11 s, and an International Normalized Ratio (INR) of 0.94.

Computed tomography (CT) of the brain was not preferred for neuroimaging because of pregnancy. It was readily possible to perform an MRI. A diffusion MRI showed diffusion restriction consistent with cortical-subcortical acute ischemia in the left frontotemporal region. Brain magnetic resonance imaging (MRI) findings were normal, with no signs of intracranial hemorrhage (Fig. 1, 2). Angiographic imaging, including CT and MR angiography, was not conducted because of a distal branch occlusion and was not available for mechanical thrombectomy. Furthermore, MR angiography is time-consuming, and CT angiography poses a radiation risk to the fetus.

In light of this information, the absence of absolute contraindications, the treatment process, and the benefits and risks are comprehensively explained to the patient's relatives, since communication with the patient cannot be established due to aphasia. After the relatives of the patient preferred intravenous rt-PA (alteplase) administration, intravenous alteplase was administered in accordance with established treatment guidelines: 0.9 mg/kg alteplase; 10% IV push and the remainder infused over 1 hour. On examination after 24 hours, the NIHSS score had decreased to two points; after seven days, she had made a complete recovery. No cerebral, vaginal, or intrauterine hemorrhages were observed after thrombolytic therapy. An obstetric USG performed after thrombolytic treatment was normal. Acetylsalicylic acid at a dose of 100 mg/day was initiated 24 hours following rt-PA administration.

Further investigations were carried out to determine stroke etiology. Serum markers for thrombophilia and an autoimmune screen were unremarkable. Doppler studies of the carotid and vertebral arteries were normal. Cardiac

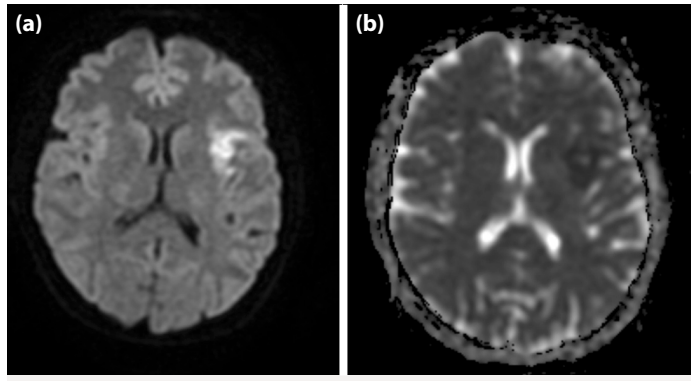

Figure 1. Brain magnetic resonance imaging: **(a)** Diffusion-weighted axial images, **(b)** Apparent diffusion coefficient.

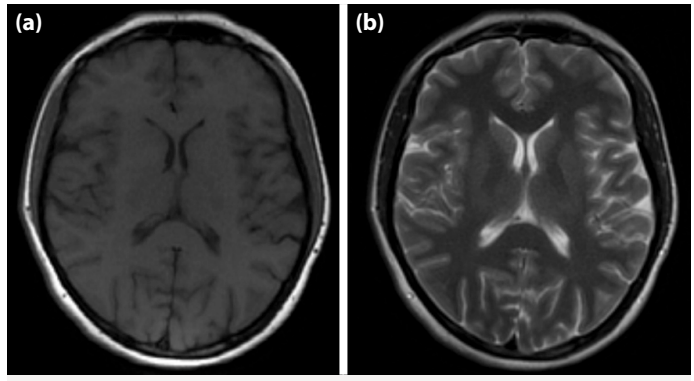

Figure 2. Brain magnetic resonance imaging: **(a)** T1-weighted axial images, **(b)** T2-weighted axial images.

evaluation, including transthoracic echocardiography and extended Holter monitoring, showed no abnormalities. She had no known risk factors for stroke other than pregnancy, and the etiology of the stroke was not determined. Serial obstetric ultrasonography was unremarkable, and the non-invasive prenatal DNA test was negative. The pregnancy ended in a spontaneous miscarriage at the 16th week of gestation, and upon obstetric evaluation, no cause was identified. She had no previous miscarriages and no known risk factors for miscarriage. This was her second pregnancy, and the first resulted in a healthy birth. Obstetric follow-up was normal for 10 weeks after IVT, and it was not thought to be related to IVT.

DISCUSSION

Intravenous thrombolysis is the current suggested treatment of acute ischemic strokes, in those meeting administration criteria.[4] Stroke treatment management is difficult in pregnant women due to concerns about the safety of radiological examinations and the risk of complications of revascularization treatments.[1] Since pregnant women

are excluded from randomized controlled trials of IVT, the effectiveness and potential risks of thrombolytic treatment are poorly understood. Most publications are either case reports or small series, and there have been few retrospective registry-based case-control studies of IVT during pregnancy.[4-6,8]

According to the American Stroke Association recommendation (class IIb), and given limited data, alteplase can be used during pregnancy if the expected benefit in treating moderate or severe stroke outweighs the potential risk of uterine bleeding.[4] The European Stroke Organization (ESO) guidelines on stroke in women do not provide evidence-based recommendations on IVT during pregnancy due to the absence of randomized clinical trials. Experts agree that IV thrombolysis may be administered during pregnancy, provided the patient is eligible and a careful risk-benefit evaluation is conducted in each case.[5]

An important concern in medical treatment during pregnancy is whether it is teratogenic. Rt-PA is unable to cross the placental barrier because of its large molecular weight, and it has not shown teratogenic effects in animals. An embryocidal effect has been observed at high doses in some animal studies, but not at 1 mg/kg, and it is classified as pregnancy category C.[1] Fetal prognosis may result in a healthy birth in most cases, in others abortion have also been reported.[3,6,8]

Brain MRI is the preferred examination for patients with suspected cerebrovascular disease during pregnancy and is not associated with an increased fetal risk. If a brain MRI cannot be performed promptly, a CT scan should be performed. Since the radiation rate of CT on the fetus is at an acceptable level during maternal head and neck examination, it can be used with abdominal protection in pregnant patients with stroke.[2,7,9]

In retrospective studies, there were no differences in intracranial or systemic hemorrhages between pregnant and recently postpartum patients treated with IVT and non-pregnant women. Although there was reported in some studies an increase in symptomatic intracranial hemorrhage in pregnant and postpartum patients, no major systemic bleeding or in-hospital deaths were observed.[10] The short-term outcome and the risk of complications appear to be similar in pregnant and non-pregnant IS patients treated with IVT.[6,8,10]

CONCLUSION

IVT may be offered to pregnant patients when its potential benefits outweigh the anticipated risks or adverse effects. If MRI is not available, CT can be used for neuroimaging in pregnant patients with suspected cerebrovascular disease. Since controlled studies cannot be conducted in pregnant women for ethical reasons, case reports are important for determining the benefits and risks of thrombolytic therapy.

Ethics Committee Approval: This is a single case report, and therefore ethics committee approval was not required in accordance with institutional policies.

Informed Consent: Written informed consent was obtained from the subject of this study.

Conflict of Interest: The authors have no conflicts of interest to declare.

Funding: The authors declared that this study received no financial support.

Use of AI for Writing Assistance: No use of AI-assisted technologies was declared by the authors.

Author Contributions: Concept – YÜ, DYÇ, ÖK; Design – YÜ, DYÇ, ÖK; Supervision – YÜ, DYÇ, ÖK; Resource – DYÇ; Data Collection and/or Processing – YÜ, DYÇ, ÖK; Analysis and/or Interpretation – DYÇ, ÖK; Literature Review – YÜ; Writing – YÜ; Critical Review – ÖK.

Peer-review: Externally peer-reviewed.

REFERENCES

1. Selim MH, Molina CA. The use of tissue plasminogen-activator in pregnancy: a taboo treatment or a time to think out of the box. Stroke 2013;44(3):868-9. [CrossRef]
2. Ritchie J, Lokman M, Panikkar J. Thrombolysis for stroke in pregnancy at 39 weeks gestation with a subsequent normal delivery. BMJ Case Rep 2015;2015:bcr2015209563. [CrossRef]
3. Bridwell RE, Werbin AJ, Birdsong S, Goss S, Long B. A first trimester pregnancy with cerebrovascular accident treated with thrombolytic therapy. Am J Emerg Med 2021;48:376.e3-376.e5. [CrossRef]
4. Powers WJ, Rabinstein AA, Ackerson T, Adeoye OM, Bambakidis NC, Becker K, et al. Guidelines for the Early Management of Patients with Acute Ischemic Stroke: 2019 Update to the 2018 Guidelines for the Early Management of Acute Ischemic Stroke: A Guideline for Healthcare Professionals from the American Heart Association/American Stroke Association. Stroke 2019;50(12):e344-418. Erratum in: Stroke 2019;50(12):e440-1. [CrossRef]
5. Kremer C, Gdovinova Z, Bejot Y, Heldner MR, Zuurbier S, Walter S, et al. European Stroke Organisation guidelines on stroke in women: Management of menopause, pregnancy and postpartum. Eur Stroke J 2022;7(2):I-XIX. Erratum in: Eur Stroke J 2023;8(1):415. [CrossRef]
6. Béjot Y, Olié V, Lailler G, Grave C, Regnault N, Blacher J, et al. Acute revascularization therapy for ischemic stroke during pregnancy and post-partum in France. Eur Stroke J 2023;8(2):467-74. [CrossRef]

7. Bojda M, Cimprichová A, Vavríková B, Filipková A, Gdovinová Z. Intravenous thrombolysis for stroke in pregnancy should be administered if the benefit outweighs the risk: A case report and recommended diagnostic workup. Womens Health (Lond) 2021;17:1745506521999495. [CrossRef]
8. Richardt A, Aarnio K, Korhonen A, Rantanen K, Verho L, Curtze S, et al. Acute recanalization therapy for ischemic stroke during pregnancy and puerperium. J Neurol 2024;271(7):4046-56. [CrossRef]
9. Santos M, de Sousa DA. Cerebrovascular disease in pregnancy and postpartum. Curr Opin Neurol 2022;35(1):31-8. [CrossRef]
10. Leffert LR, Clancy CR, Bateman BT, Cox M, Schulte PJ, Smith EE, et al. Treatment patterns and short-term outcomes in ischemic stroke in pregnancy or postpartum period. Am J Obstet Gynecol 2016;214(6):723.e1-11. [CrossRef]