

Tenecteplase Use in Pregnancy: Case Report and Literature Review

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Objective: Stroke is a serious complication of pregnancy and affects approximately 30 per 100,000 pregnancies. Pregnancy-related hypercoagulability and hemodynamic changes increase the risk. Tenecteplase (TNK) has emerged as an alternative to alteplase for acute ischemic stroke (AIS) due to ease of administration. However, limited evidence exists regarding its use during pregnancy.

Case: A 32-year-old woman at 24 weeks gestation presented with sudden-onset left facial droop, weakness, numbness, and dysarthria (NIHSS 9). Imaging revealed an acute right middle cerebral artery infarct without hemorrhage or large vessel occlusion. Following multidisciplinary consultation, intravenous TNK was administered within 4.5 hours of symptom onset. The patient's symptoms improved rapidly, and she was discharged with an NIHSS of 2. At 37 weeks, she delivered a healthy male infant via spontaneous vaginal delivery without complications.

Conclusion: This is the first reported U.S. case of intravenous TNK administration for AIS during the second trimester of pregnancy, resulting in full maternal and fetal recovery. TNK may offer a safe and effective thrombolytic option for selected pregnant patients when guided by multidisciplinary evaluation and timely intervention.

BACKGROUND

Neurologic stroke is a dangerous complication of pregnancy. It is estimated that 30 of 100,000 pregnancies in women ages 22 to 33 years old will be affected by strokes.¹ The hypercoagulable nature of pregnancy and hemodynamic changes increase the risk of stroke.^{2,3}

Stroke-related morbidity and mortality have declined due to the creation of stroke units, multidisciplinary and specialized care, and the implementation of thrombolysis and mechanical thrombectomy. Due to safety concerns, pregnancy has traditionally been an exclusion criterion in landmark thrombolytic clinical trials, leaving providers without evidence-based guidance for

treatment decisions during pregnancy.

Tenecteplase (TNK) is now routinely used for acute ischemic stroke (AIS) in several major stroke centers for nonpregnant patients, and growing trial evidence supports its noninferiority and, in some settings, superiority over Alteplase.⁵ On March 3, 2025, TNK became the first medication authorized by the US Food and Drug Administration to treat patients with AIS since alteplase in 1996.⁴

Because of pharmacological advantages, clinicians increasingly considered TNK in emergency stroke settings, including pregnancy. Much like Alteplase, TNK has a high molecular weight, preventing it from crossing the placenta.⁵ There have been no

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side effects reported in pregnant women treated with recombinant tissue plasminogen activator (rTPA).⁶

The American Heart Association (AHA) recommends treating pregnant people with suspected stroke who arrive within 4.5 hours of the onset of symptoms with alteplase, and pregnancy is no longer considered an absolute contraindication to thrombolysis in cases of disabling stroke, supporting its use after careful risk and benefit considerations.⁷

In this report, we present a pregnant woman in her second trimester who received intravenous TNK for acute ischemic stroke. Considering the available literature, we discuss diagnostic workup, therapeutic decision-making, and maternal and fetal outcomes.

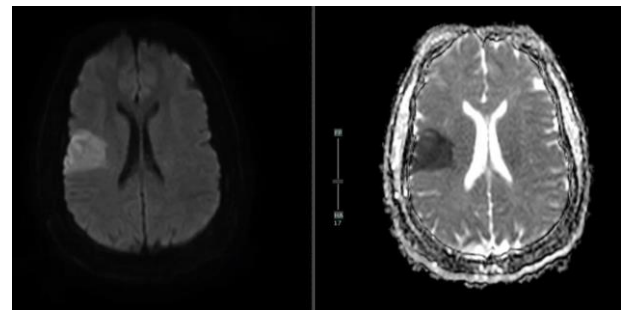
Case

A 32-year-old woman at 24 weeks of gestational age with a history of hypertension during pregnancy and recent NSTEMI presented with sudden-onset left facial droop, left-sided weakness, numbness, and dysarthria. The patient was on aspirin 81 mg daily. On arrival, her vital signs were within normal limits, including normal glucose fingerstick. Her initial Neurological Institute of Health Stroke Scale (NIHSS) was⁹.

Head Computer Tomography revealed no hemorrhage. Computer Tomography Angiography and Venogram (CTA/CTV) showed no large vessel occlusion or venous thrombosis. She was seen emergently by maternal fetal medicine, and electronic fetal monitoring was performed. The fetus had a normal baseline heart rate, and no deceleration was noted. The patient was within the four-and-a-half-hour window for thrombolysis. She received TNK following a multidisciplinary discussion with neurology, maternal-fetal medicine, and emergency department specialists. Door-to-needle time was 48 minutes. Following TNK administration, brain magnetic resonance imaging (MRI) without contrast revealed an acute wedge-shaped infarct within the right middle

cerebral artery territory involving the right posterior frontal lobe, operculum, and insular cortex without any hemorrhagic transformation. (Figure A)

Figure 1: Diffusion-Weighted Imaging (DWI) showing an acute wedge-shaped infarct within the right middle cerebral artery territory involving the right posterior frontal lobe, operculum, and insular cortex with corresponding change on Apparent Diffusion Coefficient (ADC).



Basic laboratory, echocardiogram, and telemetry were unrevealing. Lupus, anticardiolipin IgA, IgM, and IgG beta-2 glycoprotein, antithrombin activity, Factor V, Prothrombin gene mutation, and homocysteine levels were within normal range. Following consultation with maternal-fetal medicine, the patient was initiated on prophylactic enoxaparin and low-dose aspirin for stroke prevention. The patient's symptoms quickly improved, and the patient was discharged home from the hospital with an NIHSS of 2, accounting for mild dysarthria and left facial droop. No fetal complications occurred.

At 37 weeks of gestation, she had a spontaneous vaginal delivery of a healthy male infant with Apgar scores of nine and nine. The neonatal exam on day 1 was within normal limits. The patient and the infant were discharged from the hospital without any complications.

DISCUSSION

The use of Tenecteplase (TNK) for acute ischemic stroke (AIS) has been increasing in recent years. There are only two other case reports of the use of TNK in pregnancy.^{8,9} In 2024, the first case was

reported of TNK administration for stroke in a pregnant patient at 6 weeks of gestation without complications.¹⁰ Another case reported a patient at 28 weeks of gestation who later underwent cesarean delivery without complications.⁹

The expedited triaging of a pregnant person suffering a stroke is crucial. Any contraindications to thrombolysis therapy must be determined. Other pregnancy-related factors may pose a risk to the mother or fetus, including radiation exposure, preterm labor, hemorrhagic risk in the setting of placental abruption, and the timing of delivery relative to thrombolysis.¹⁰

There is a theoretical increased risk of abruption or hemorrhage with the use of TNK during pregnancy. However, in rabbit animal models that received a single dose of TNK at a dose 7 times greater than that in human exposure, it did not elicit any embryotoxicity.³ While this evidence is limited to animal studies, it poses promising results for the safety profile of TNK.

Evaluation from multiple specialties should be expedited to ensure mother and fetal stability. While pregnancy has traditionally been an exclusion criterion for thrombolysis due to theoretical fetal risks, no conclusive data is available. The use of intravenous or endovascular rt-PA may be safely considered in selected cases of disabling stroke by a case-by-case approach in collaboration with obstetric and stroke teams, weighing maternal benefit against fetal risk.¹¹

Our case emphasizes the urgent need for post-marketing surveillance and prospective registry data for Tenecteplase use during pregnancy. It also highlights the importance of developing streamlined protocols for the administration of Tenecteplase in pregnant patients presenting with stroke-like symptoms. Such protocols should facilitate timely thrombolytic treatment and prompt multidisciplinary coordination to ensure rapid evaluation of both the mother and fetus. To the best of our knowledge, this is the first reported case in the United States in which Tenecteplase was administered during the second trimester of

pregnancy. This case emphasizes the critical importance of multidisciplinary collaboration among Neurology, Obstetrics, and Critical Care teams. Timely treatment with TNK has the potential to be lifesaving for both the mother and the fetus.

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Disclosures

None.

Data Sharing Statement

The relevant anonymized patient-level data are available on reasonable request from the authors.

Ethical Approval

All procedures performed in the studies involving human participants were per the Institutional Review Board (IRB) ethical standards and national research committee and the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Competing Interests

The authors have no personal, financial, or institutional interest in any of the drugs, materials, or devices described in this article.

Authors' Contributions

All authors gave final approval of the version to be published and agree to be accountable for all aspects of the work.

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