

INTRAVENOUS THROMBOLYSIS WITH TENECTEPLASE FOR ACUTE ISCHEMIC STROKE AT 10 WEEKS OF PREGNANCY: A CASE REPORT

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Abstract

Acute ischemic stroke during pregnancy is rare, but any delay in treatment can expose both the mother and the fetus to preventable risks. The evidence supporting the use of intravenous thrombolysis during pregnancy comes largely from observational studies and case reports, and experience with tenecteplase remains particularly limited. We report the case of a 34-year-old woman (G3P1), 10 weeks into her pregnancy, who presented two hours after the sudden onset of left-sided hemiplegia, facial weakness, hemisensory loss, dysarthria, and partial homonymous hemianopia. Her NIHSS (National Institutes of Health Stroke Scale) score was 13, and her blood pressure was 210/100 mmHg. The brain MRI noted restricted diffusion in the right posterior limb of the internal capsule, with no corresponding FLAIR abnormality. After reducing the blood pressure to 180/100 mmHg and confirming an ongoing intrauterine pregnancy, tenecteplase was administered intravenously at a dose of 0.25 mg/kg, 3 hours and 35 minutes after the onset of symptoms. The NIHSS score improved to 9 after 30 minutes, then to 4 after eight hours. A follow-up Brain MRI performed 24 hours later revealed no intracranial hemorrhage. No immediate obstetric bleeding was observed, and fetal heart activity was still present. This case demonstrates that pregnancy alone should not automatically preclude reperfusion therapy in the event of a disabling ischemic stroke. It also highlights the need for rapid multidisciplinary decision-making, meticulous blood pressure control, and structured maternal and obstetric monitoring when tenecteplase is used in early pregnancy.

INTRODUCTION

Strokes during pregnancy are rare, but their consequences can be severe. The therapeutic dilemma is particularly acute during the first trimester, when clinicians must balance an immediate and potentially disabling maternal neurological event against fetal and obstetric risks that have not yet been fully characterized. Current guidelines emphasize that pregnancy should not delay appropriate brain imaging or

the consideration of evidence-based reperfusion therapy [1,2].

Tenecteplase is now a recognized alternative to alteplase in eligible adults with acute ischemic stroke when administered at a dose of 0.25 mg/kg; however, pregnant patients were excluded from the randomized trials that established its efficacy [2,3]. Published experience regarding pregnancy therefore remains limited to small observational series and isolated cases [4-7]. We report the early neurological and obstetric course

of a woman treated with tenecteplase for a disabling ischemic stroke at 10 weeks of gestation.

Case Presentation

A 34-year-old woman, with three previous pregnancies and one previous childbirth, who was 10 weeks pregnant, presented to the emergency department two hours after the sudden onset of weakness on her left side. Her medical history included type 1 diabetes and chronic primary hypertension. Examination revealed left-sided hemiplegia affecting the face

and limbs, sensory loss on the left side, dysarthria, and partial left homonymous hemianopia. The initial NIHSS score was 13. Blood pressure was 210/100 mmHg.

A brain MRI performed approximately two hours and thirty minutes after the onset of symptoms revealed diffusion restriction involving the posterior limb of the right internal capsule, without corresponding hyperintensity on FLAIR sequences, which supports the diagnosis of a recent infarction in the territory of the right anterior choroidal artery (Figure 1).

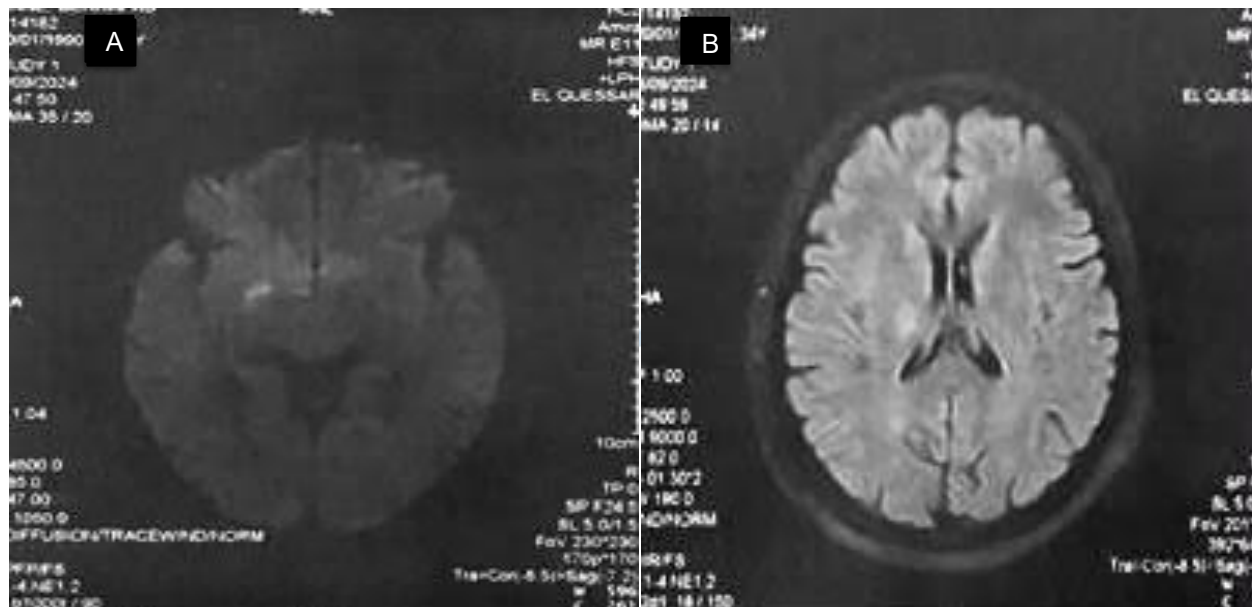


Figure 1. Representative MRI images: (A) diffusion-weighted imaging and (B) FLAIR imaging at a comparable supratentorial level showing an acute ischemic focus in the territory of the right anterior choroidal artery, involving the posterior limb of the internal capsule, with DWI hyperintensity and no corresponding FLAIR hyperintensity, resulting in a DWI-FLAIR mismatch.

An urgent obstetric ultrasound confirmed an ongoing intrauterine pregnancy with fetal heart activity. The decision to proceed with reperfusion was made jointly by the emergency medicine, neurology, and obstetrics teams after discussing the expected benefits for the mother and the uncertain data specific to the pregnancy. Blood pressure was lowered after administration of nicardipine to 180/100 mmHg prior to thrombolysis. As for laboratory results the hemoglobin level was 11.6 g/dL, the platelet

count was 170,600/mm³, and the blood glucose level was 1.8 g/L (180 mg/dL), INR/PT was normal, creatinine was 8 mg/l. Tenecteplase was administered intravenously at a dose of 0.25 mg/kg, with a maximum dose of 25 mg (The patient weighs 80 kg, she was given 20 mg of tenecteplase), 3 hours and 35 minutes after the onset of symptoms.

Neurological improvement occurred within 30 minutes, with the NIHSS score dropping to 9. After eight hours, it had fallen to 4. A follow-up

brain CT scan performed 24 hours later revealed no hemorrhagic changes. No vaginal bleeding or other obstetric bleeding was observed, and a follow-up ultrasound confirmed persisting fetal heart activity. The immediate prognosis for both the mother and the fetus was favorable.

The cardiovascular evaluation, which included an ECG, echocardiogram, and Doppler ultrasound of the supra-aortic trunks, revealed no abnormalities; therefore, the diagnosis was a stroke secondary to a hypertensive crisis.

Clinical Timeline

Time from onset	Assessment or intervention	NIHSS	Key finding
2 h	Emergency assessment	13	BP 210/100 mmHg left-sided hemiplegia dysarthria
~2 h 30 min	Brain MRI	13	Clinical summary: right internal-capsule diffusion restriction without FLAIR correlate
3 h 35 min	Tenecteplase 0.25 mg/kg after BP control	13	BP lowered to 180/100 mmHg
+30 min after treatment	Early reassessment	9	Motor and facial improvement
8 h	Neurological reassessment	4	Continued clinical improvement
24 h	Follow-up MRI and obstetric surveillance	4	No intracranial hemorrhage; no obstetric bleeding; fetal cardiac activity present
Discharge / 30 days	Neurological follow-up		complete neurological recovery
24 weeks of gestation (90 days)	Obstetric follow-up		Severe preeclampsia and pregnancy loss; causal relationship with tenecteplase cannot be established from this single case

Discussion

This case illustrates a complex but increasingly recognized principle: a disabling ischemic stroke remains a maternal emergency in which time is a critical factor during pregnancy.

Both the American Heart Association's scientific statement on maternal stroke and the European guidelines recommend considering intravenous thrombolysis on a case-by-case basis when the expected neurological benefit outweighs the estimated maternal and obstetric risks [1,4].

Pregnancy, therefore, does not in itself constitute a reason to refuse treatment or to delay appropriate imaging.

The choice of thrombolytic agent warrants careful consideration. In non pregnant adults treated within 4.5 hours, tenecteplase at 0.25 mg/kg demonstrates efficacy and safety comparable to those of alteplase and is recommended as an alternative in current stroke guidelines [2,3]. These findings cannot be simply extrapolated without reservation to pregnancy, as pregnant

patients were not included in the pivotal trials. Most pregnancy-specific clinical data on thrombolysis pertain to alteplase [5]. A Finnish national cohort also suggests that some pregnant or postpartum patients may benefit from recanalization treatment with acceptable outcomes, although the number of patients remains small and the treatment approaches were heterogeneous [6].

Published data on the use of tenecteplase during pregnancy remain scarce. Namasivayam and colleagues reported successful use during the third trimester [7]. More recently, Rivera-Rivera and colleagues described the administration of tenecteplase in the first trimester, followed by thrombectomy, in the context of a large vessel occlusion [8]. The present case report differs from these cases in that the clinical account describes a small deep infarction treated solely with intravenous tenecteplase. It should therefore be interpreted as an additional clinical experience rather than as evidence of pregnancy-specific safety.

Several factors supported treatment in this patient: the neurological deficit was disabling, the presentation fell within the standard therapeutic window for thrombolysis, the Brain MRI had ruled out any hemorrhage, the platelet count was adequate, and blood pressure had been lowered below the usual threshold prior to thrombolysis [2]. The rapid decline in the NIHSS score following treatment is clinically encouraging, but a mere temporal association is insufficient to establish that tenecteplase alone is responsible for this improvement. Small, deep infarcts can exhibit fluctuations, and there is no untreated control group in a case report.

The subsequent clinical course was marked by a gradual recovery of motor and sensory functions. At 24 weeks of gestation, the pregnancy was complicated by severe preeclampsia and a miscarriage. Given the time elapsed between thrombolysis and this subsequent obstetric event, the patient's preexisting chronic hypertension, and the inherent limitations of a single case report, it is not possible to establish a causal relationship between exposure to tenecteplase

and the miscarriage. Conversely, this single observation does not prove the complete absence of any relationship.

Conclusions

An acute, disabling ischemic stroke occurring early in pregnancy warrants the same level of urgency as a stroke occurring outside of pregnancy. In this patient, administration of tenecteplase within four hours resulted in significant early neurological improvement, without immediate intracranial or obstetric hemorrhage and with preserved fetal heart activity. Since pregnancy-specific data on tenecteplase remain limited, treatment decisions must be individualized, made through a multidisciplinary approach, and accompanied by careful monitoring of both the mother and the fetus. The favorable early outcome reported here is instructive. The subsequent onset of severe preeclampsia and a miscarriage at 24 weeks should be interpreted with caution, as this case does not establish a causal relationship with tenecteplase.

Declarations

Conflicts of interest: The authors declare that they have no conflicts of interest.

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Human subjects: Written informed consent for publication of the clinical details and images was obtained from the patient.

Data availability: De-identified data supporting this case are available from the corresponding author on reasonable request, subject to institutional and patient-consent restrictions.

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