

# Stroke Mimics – Glioblastoma Presenting with Hemorrhage after Thrombolysis: Case Report

## *Stroke mimics – Glioblastoma apresentando hemorragia após trombólise: Relato de caso*

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Arq Bras Neurocir 2023;42(2):e186–e188.

### Abstract

**Background** Stroke is a clinical syndrome characterized by a sudden-onset neurological deficit of vascular cause. Stroke-like clinical symptoms that are later found to have nonvascular disorders have been termed stroke mimics (MIM), and their incidence ranges from 1.3 to 25% in patients not treated with thrombolytic therapy. Eventually, intravenous thrombolysis of MIM may occur.

**Case Description** We describe a 74-year-old woman with abrupt global aphasia who received thrombolytic therapy after the presumed diagnosis of acute ischemic stroke. She gradually improved despite the finding of an asymptomatic left temporal hematoma on the computed tomography (CT) scan. Two months later, she presented with a new focal neurological deficit and was diagnosed with a glioblastoma in the topography of the previous bleeding.

**Conclusion** This case highlights the rare occurrence of hemorrhage after thrombolysis in patients with MIM.

### Keywords

- ▶ stroke mimics
- ▶ glioblastoma
- ▶ thrombolysis
- ▶ complications

### Resumo

**Introdução** O acidente vascular encefálico (AVC) é uma síndrome clínica caracterizada por déficit neurológico de início súbito. Casos nos quais a sintomatologia é semelhante aos AVCs e que, posteriormente, são identificados como distúrbios não vasculares, foram denominados de *stroke mimics*, cuja incidência varia entre 1,3 e 25% em pacientes diagnosticados com AVC. Eventualmente, pode ocorrer trombólise intravenosa de *stroke mimics*.

**Descrição do caso** Descrevemos o caso de uma mulher de 74 anos com afasia global abrupta que recebeu terapia trombolítica após o diagnóstico presumido de AVC isquêmico. A paciente apresentou melhora gradual dos sintomas apesar do achado na tomografia computadorizada (TC) de crânio de um hematoma temporal esquerdo

### Palavras-chave

- ▶ stroke mimics
- ▶ glioblastoma
- ▶ trombólise
- ▶ complicações

received  
November 14, 2020  
accepted  
June 16, 2021  
article published online  
June 13, 2022

DOI <https://doi.org/10.1055/s-0041-1733920>.  
ISSN 0103-5355.

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Thieme Revinter Publicações Ltda., Rua do Matoso 170, Rio de Janeiro, RJ, CEP 20270-135, Brazil

assintomático. Dois meses depois, a paciente apresentou novo déficit neurológico focal e foi diagnosticada com glioblastoma na topografia do sangramento anterior.

**Conclusão** Este caso destaca a rara ocorrência de hemorragia após trombólise em paciente portador de glioblastoma e com diagnóstico inicial de AVC isquêmico.

## Introduction

Cerebral neoplasms are a known cause of stroke mimics (MIM).<sup>1</sup> Approximately 5% of the patients diagnosed with brain tumors are diagnosed at the initial presentation with stroke, and 12% of the patients initially diagnosed with stroke are ultimately given the diagnosis of brain tumor. Glioblastoma (GBM) manifesting with an apoplectic presentation occurs at an estimated frequency of 4%.<sup>2</sup> We report a case of intratumoral hemorrhage after intravenous (IV) thrombolysis in a patient with glioblastoma mimicking stroke.

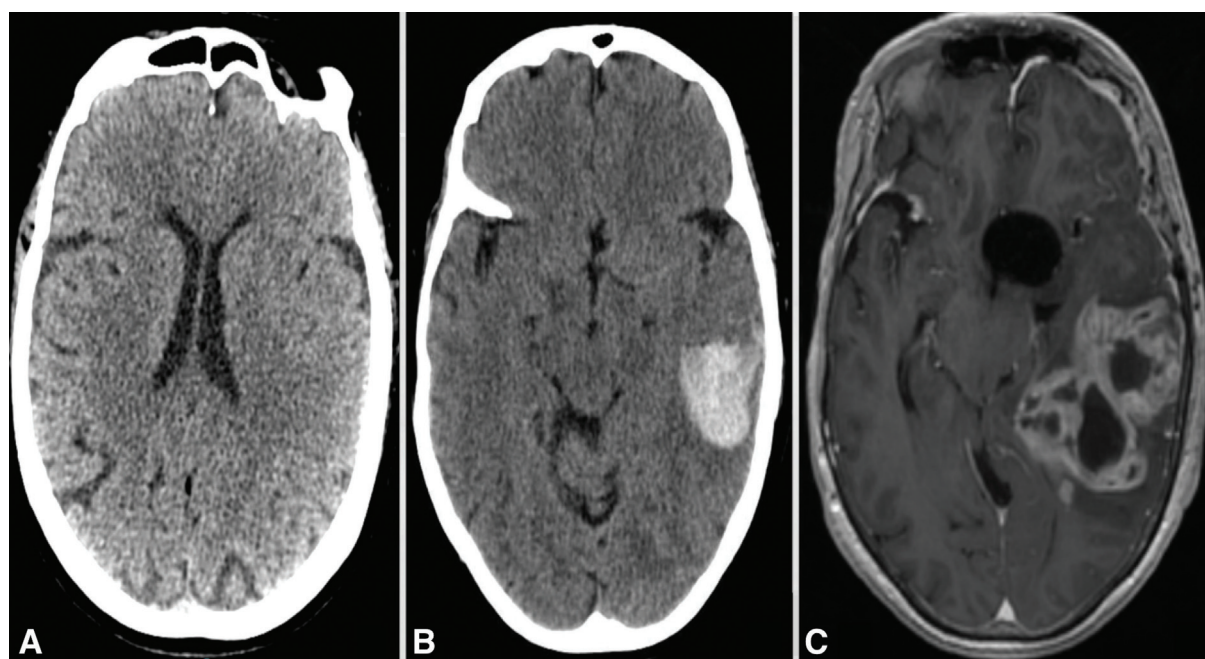
## Case Report

A 74-year-old Caucasian woman presented with acute-onset global aphasia. The patient had no significant prior medical history and was not under medication. On admission, vital signs were unremarkable. Carotid and cardiac auscultations were normal. Pulses were full and symmetrical in both the upper and lower limbs.

On admission, her National Institute of Health Stroke Scale (NIHSS) score was 06. Her brain computed tomography (CT) demonstrated subtle mass effect in the left temporal

region, which was attributed to an acute stroke (–Fig. 1A). She received intravenous tissue plasminogen activator (IVt-PA) within 3 hours of the onset of her symptoms. The patient gradually improved despite the finding of an asymptomatic left temporal lobe hemorrhage (–Fig. 1B). She was discharged without deficits. One month after discharge, she went through surgical treatment of an unruptured anterior communicating artery aneurysm and was discharged uneventfully.

Two months later, she returned to our clinic with a 3-week history of mental confusion, right hand weakness, and speech disturbance. Upon neurological examination, she presented subtle facial asymmetry, grade 4 strength in the distal right upper limb according to the modified scale of the Medical Research Council, and discrete right hemibody hyperreflexia, with no other signs of pyramidal release. The patient was submitted to contrast-enhanced magnetic resonance imaging (MRI), which demonstrated an expansive lesion in the left temporal lobe, suggesting a malignant tumor (–Fig. 1C). The patient underwent brain biopsy, and the histologic analysis revealed a glioblastoma. She developed progressive neurological deterioration and died 32 days after surgery.



**Fig. 1** (A) Noncontrast CT at presentation demonstrating subtle mass effect in the left temporal lobe, with little asymmetry of the lateral ventricles. (B) Noncontrast CT at presentation demonstrating left temporal lobe hemorrhage. (C) MRI of the brain, axial view, T1-weighted, post-gadolinium, demonstrates a large lesion in the left frontotemporal region, with necrosis and typical ring-like enhancement suggestive of malignant brain tumor. The image also shows field distortion due to aneurysm clip.

## Discussion

Our hypothesis is that this patient was misdiagnosed with stroke and that the post-thrombolysis bleeding area could represent an intratumoral hemorrhage.

The rates of MIM treated with IVtPA range from 1.4 to 16.7%.<sup>1,3</sup> A recent multicenter study<sup>3</sup> suggests that thrombolysis in stroke mimics is safe because the rate of symptomatic intracranial hemorrhage (SICH) was low, and death was not attributed to the bleeding. The SICH rate in MIM was 1.0%, compared with 7.9% in strokes.<sup>3</sup>

A case of hemorrhage after thrombolysis for a presumed stroke in a patient with glioblastoma was previously reported.<sup>4</sup> As in our case, bleeding did not lead to worsening of the clinical outcome.<sup>4</sup> Despite this, some authors<sup>2,5</sup> suggest that t-PA in patients with GBM could degenerate the extracellular matrix, facilitating tumor spread.

## Conclusion

Brain tumors should be considered in the differential diagnosis of acute ischemic events. The present case report highlights the challenges of interpreting the initial CT,

recognizing MIM, and the risk of IV-TPA in nonstroke conditions, which, according to the current literature, does not exceed the benefits of thrombolytic therapy.

### Conflict of Interests

The authors have no conflict of interest to declare.

## References

- 1 Nguyen PL, Chang JJ. STROKE MIMICS AND ACUTE STROKE EVALUATION: CLINICAL DIFFERENTIATION AND COMPLICATIONS AFTER INTRAVENOUS TISSUE PLASMINOGEN ACTIVATOR. *J Emerg Med* 2015;49(02):244–252. Doi: 10.1016/j.jemermed.2014.12.072
- 2 Klüenemann HH, Skljarevski V, Hamill RW. A stroke-like presentation of glioblastoma multiforme. *J Stroke Cerebrovasc Dis* 2003; 12(01):47–48. Doi: 10.1053/jjscd.2003.8
- 3 Zinkstok SM, Engelter ST, Gensicke H, et al. Safety of thrombolysis in stroke mimics: results from a multicenter cohort study. *Stroke* 2013;44(04):1080–1084. Doi: 10.1161/STROKEAHA.111.000126
- 4 Grimm SA, DeAngelis LM. Intratumoral hemorrhage after thrombolysis in a patient with glioblastoma multiforme. *Neurology* 2007; 69(09):936–936. Doi: 10.1212/01.wnl.0000265392.03231.ac
- 5 Chen H, Cebula H, Schott R, Dietemann JL, Froelich S. Glioblastoma multiforme presenting with ischemic stroke: case report and review of the literature. *J Neuroradiol* 2011;38(05):304–307. Doi: 10.1016/j.neurad.2011.01.008