



# Vision Loss: A Rare Complication of Intravenous t-PA in the Treatment of Acute Ischemic Stroke

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## SUMMARY

The authors present a case of intraocular hemorrhage as a complication of tissue plasminogen activator (t-PA) use for acute ischemic stroke (AIS) in a patient without previously diagnosed ocular disease. Permanent vision loss should be discussed as a complication when obtaining informed consent for the use of t-PA for the treatment of AIS.

## INTRODUCTION

The management of an acute ischemic stroke may require thrombolytic therapy via administration of t-PA if the patient is a candidate without contraindications. While thrombolysis offers potential neurologic recovery, it comes with the risk of multi-organ system hemorrhage such as intracranial, retroperitoneal, gastrointestinal, respiratory, and genitourinary bleeding. Two previous cases of vision loss were reported after t-PA usage for ischemic stroke as well as some other reports stating its usage for the treatment of myocardial infarction<sup>1,3</sup>. In all previously reported cases, an underlying history of ocular disease predisposing the patients to retinal neovascularization such as a central retinal vein occlusion or proliferative diabetic retinopathy was present. The authors report the case of a patient who was administered t-PA for an acute ischemic stroke and consequently developed radiographically confirmed intraocular hemorrhage and associated vision loss.

## REFERENCES

1. Hormese M, Wichter M. Vitreo-Retinal Hemorrhage after Thrombolysis in a Patient with Acute Ischemic Stroke: A Case Report. *Frontiers in Neurology*. 2012;3. doi:10.3389/fneur.2012.00071
2. Miller DJ, Simpson JR, Silver B. Safety of Thrombolysis in Acute Ischemic Stroke: A Review of Complications, Risk Factors, and Newer Technologies. *The Neurohospitalist*. 2011;1(3):138-147. doi:10.1177/1941875211408731
3. Shah L, Verstraeten T, Wright D, Rana S. Vitreous Hemorrhage as a Complication of IV-t-PA Therapy in a Patient with Acute Stroke. *Neurology*. 2014; 82(10).

## CASE PRESENTATION

An 86-year-old African American female was admitted for the correction of electrolyte abnormalities. Three days into her hospital course, she developed stroke-like symptoms, had her last known normal 3 hours prior and a CT scan showed no evidence of acute intracranial hemorrhage (Figure 1).

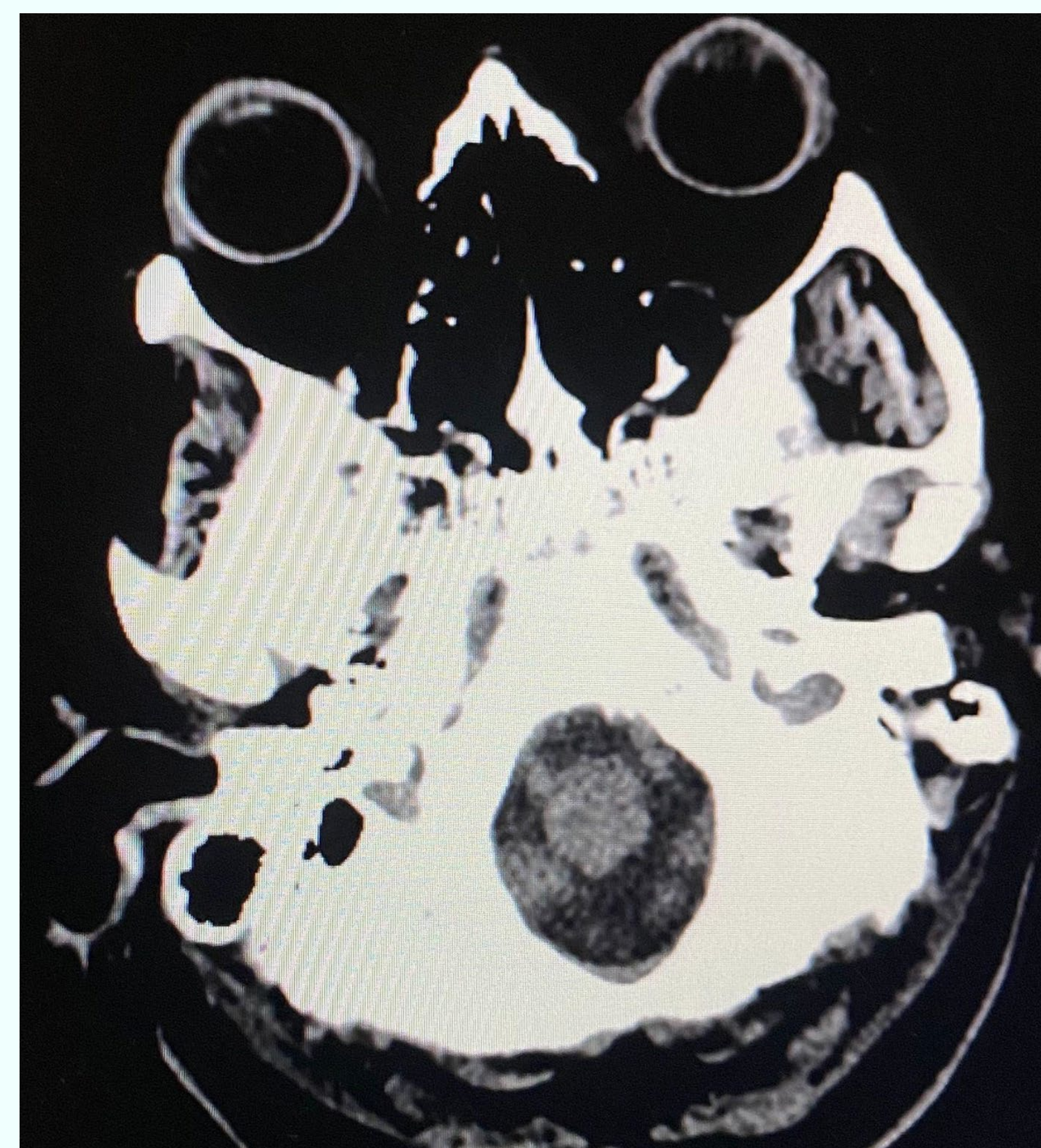


Figure 1: A CT scan of the head after onset of neurological symptoms demonstrating no intracranial hemorrhage.

### Clinical Course

- Two hours after tPA administration, a CT scan showed no evidence of hemorrhagic conversion. Four hours later, the patient began to complain of redness, irritation, and decreased visual acuity in the right eye. Over the course of the day, the patient's visual acuity progressed to hand motion in the right hand.
- A repeat CT scan was performed 16 hours after t-PA administration showed hemorrhage in the posterior aspect of the right globe (Figure 2). The patient was started on intraocular pressure lowering agents and transferred to a tertiary care facility for ophthalmologic evaluation.

### Ophthalmology Consultation

- No prior ocular history. Dilated fundus examination showed preretinal vitreous hemorrhage. There was no evidence of rubeosis, choroidal or retinal neovascularization. A B-scan demonstrated no evidence of retinal detachment but confirmed dense vitreous hemorrhage as well as a submacular lesion, consistent with hemorrhage. At discharge, the patient was back at baseline in regards to activities and functionality except for vision loss in the right eye.

### Outpatient Follow Up

- Follow up 4 months later has shown no improvement in the patient's visual acuity with only light perception in the right eye.

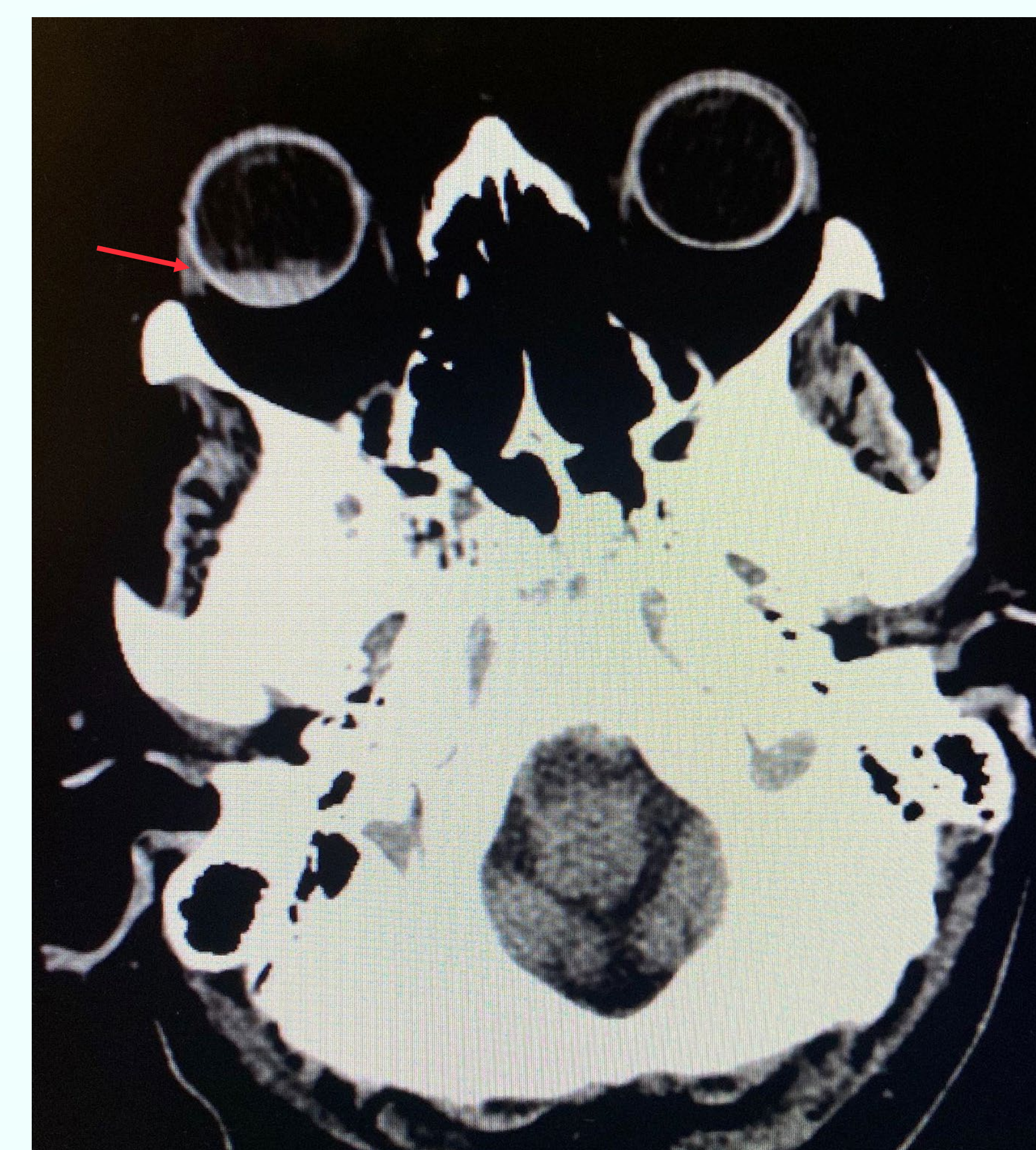


Figure 2: A CT scan of the head 16 hours after t-PA administration when patient began complaining of vision loss. Red arrow indicating hemorrhage in the posterior of the right globe.

Label Warnings for IV t-PA Use <sup>2</sup>	
Recent surgery or procedure	Hemostasis defects secondary to hepatic or renal disease
Cerebrovascular disease	Severe Hepatic dysfunction
Recent intracranial hemorrhage	Pregnancy
Recent GI or GU bleeding	Diabetic hemorrhagic retinopathy or other hemorrhagic ophthalmic conditions
Recent Trauma	Septic thrombophlebitis
Hypertension	Advanced Age
Acute Pericarditis	Patients on oral anticoagulants
Subacute bacterial endocarditis	

## DISCUSSION

This case demonstrates the rare consequence of vision loss following tPA administration for acute ischemic stroke. Since the patient had no visual deficits or radiologic evidence of intraocular hemorrhage on the initial CT scan when evaluating the new-onset neurologic deficits, this complication can be attributed to the use of t-PA. Vision loss has rarely been reported in the literature due to t-PA usage. Two previous cases of vision loss were reported after t-PA usage for ischemic stroke, while there have been other reports after its usage for the treatment of myocardial infarction. In all previously reported cases, a history of ocular disease predisposing the patients to retinal neovascularization such as a central retinal vein occlusion or proliferative diabetic retinopathy was present. The authors believe this is the first reported case of intraocular hemorrhage as a consequence of t-PA usage where the patient did not have any previous diagnosed ocular disease. This underlines the importance that vision loss should be discussed as a potential complication when obtaining informed consent for the use of intravenous t-PA for the treatment of acute ischemic stroke even when patients have no prior history of ophthalmologic disease.