Terson Syndrome in a Case of Aneurysmal Subarachnoid Hemorrhage: A Case Report

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Abstract

Terson syndrome refers to the presence of intraocular hemorrhage associated with intracranial hemorrhage , most commonly subarachnoid hemorrhage. It is often underdiagnosed, particularly in critically ill patients, as ophthalmic examination may not be feasible. We report a case of a 50-year-old male who presented with acute subarachnoid hemorrhage , left internal carotid artery aneurysm and subsequently demonstrated progressive intracranial hemorrhagic worsening with intraparenchymal, intraventricular, and subdural components. Repeat computed tomography revealed curvilinear hyperdensities within the vitreous chamber of the left globe, consistent with vitreous hemorrhage, establishing the diagnosis of Terson syndrome. This case highlights the importance of careful evaluation of orbital structures on routine neuroimaging in patients with severe subarachnoid hemorrhage.

Keywords: Terson syndrome; Subarachnoid hemorrhage; Vitreous hemorrhage; Computed tomography; Aneurysmal bleed

INTRODUCTION

Terson syndrome is defined as intraocular hemorrhage occurring in association with intracranial hemorrhage, intracerebral hemorrhage , particularly subarachnoid hemorrhage. Vitreous hemorrhage is the most common ocular manifestation. Hemorrhage could also be seen in subretinal spaces, sub hyaloid space etc. The condition is believed to occur due to a sudden rise in intracranial pressure leading to retinal venous and arterial hypertension and rupture of intraocular vessels. In patients with severe subarachnoid hemorrhage, ophthalmic evaluation is often deferred, making radiological identification of vitreous hemorrhage crucial for diagnosis.

CASE REPORT

A 50-year-old male presented to the emergency department on 26 October 2025 with severe headache and giddiness of one-day duration. On presentation, he was hypertensive with a blood pressure of 200/160 mmHg. A non-contrast computed tomography (NCCT) scan of the brain was performed.

NCCT brain demonstrated hyperdense blood products within the sulcal spaces involving the bilateral frontal, parietal, and temporal lobes, extending into the basal cisterns, sylvian fissures, and interhemispheric fissure, suggestive of acute to subacute subarachnoid hemorrhage. There was associated diffuse cerebral edema without significant midline shift. Orbital contents were reported as unremarkable at this stage.

MRI brain with angiographic evaluation performed on 31 October 2025 revealed multiple intracranial aneurysms involving the left internal carotid artery (Figure 2) and anterior cerebral artery segments, with an associated pseudoaneurysm.

The patient re-presented on 1 December 2025 with severe headache, markedly elevated blood pressure (220/160 mmHg), and a history of a lucid interval. Repeat NCCT brain demonstrated marked interval worsening with intraparenchymal, intraventricular, and subdural hemorrhage, corresponding to Modified Fisher Grade 4 subarachnoid hemorrhage. Associated diffuse

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cerebral edema and ventricular dilatation suggested mild obstructive hydrocephalus.

Importantly, curvilinear hyperdensities were noted within the posterior aspect of the vitreous chamber of the left globe, consistent with vitreous hemorrhage, establishing the diagnosis of left-sided Terson syndrome (Figure 1). The patient was critically ill, precluding formal ophthalmic examination.

DISCUSSION

Terson syndrome is most commonly seen in association with severe subarachnoid hemorrhage and intracerebellar hemorrhage and traumatic brain injury and is considered a marker of raised intracranial pressure. Vitreous hemorrhage occurs due to transmission of elevated intracranial pressure to the intraocular venous and arterial system, resulting in rupture of retinal vessels. Mechanical compression of Central retinal vein due to increased pressure in the retrobulbar optic nerve sheath can also cause the rupture of capillaries in the retina and rupture of the optic nerve. Carotid artery aneurysms are rarely found to be associated with terson's syndrome but in this case it was found with association to left internal carotid artery aneurysm ,anterior intracerebral aneurysm and multiple other aneursyms and hemorrhage. No significant relationship has been established between the location of bleed and laterality of the intraocular hemorrhage but it was one of the findings noted in our patient (Figure 2). Terson's though quite common in cases of SAH is often underdiagnosed due to the critical condition and poor GCS score of most patients leading to worser visual outcomes. In our patient also an ophthalmic evaluation was deferred due to patient's critical condition, studies such as Gnanraj et al.[1] reported that the time between the patients first ocular symptom and their ophthalmological evaluation was close to 5.2 months leading to poor visual outcomes post treatment such as vitrectomy and other visual rehabilitation measures. This brings forth the need for early Ophthalmic evaluation or extensive CT imaging of orbital structures in patients with SAH, large intracerebral hemorrhages, low GCS post traumatic brain injury and brain aneursyms.

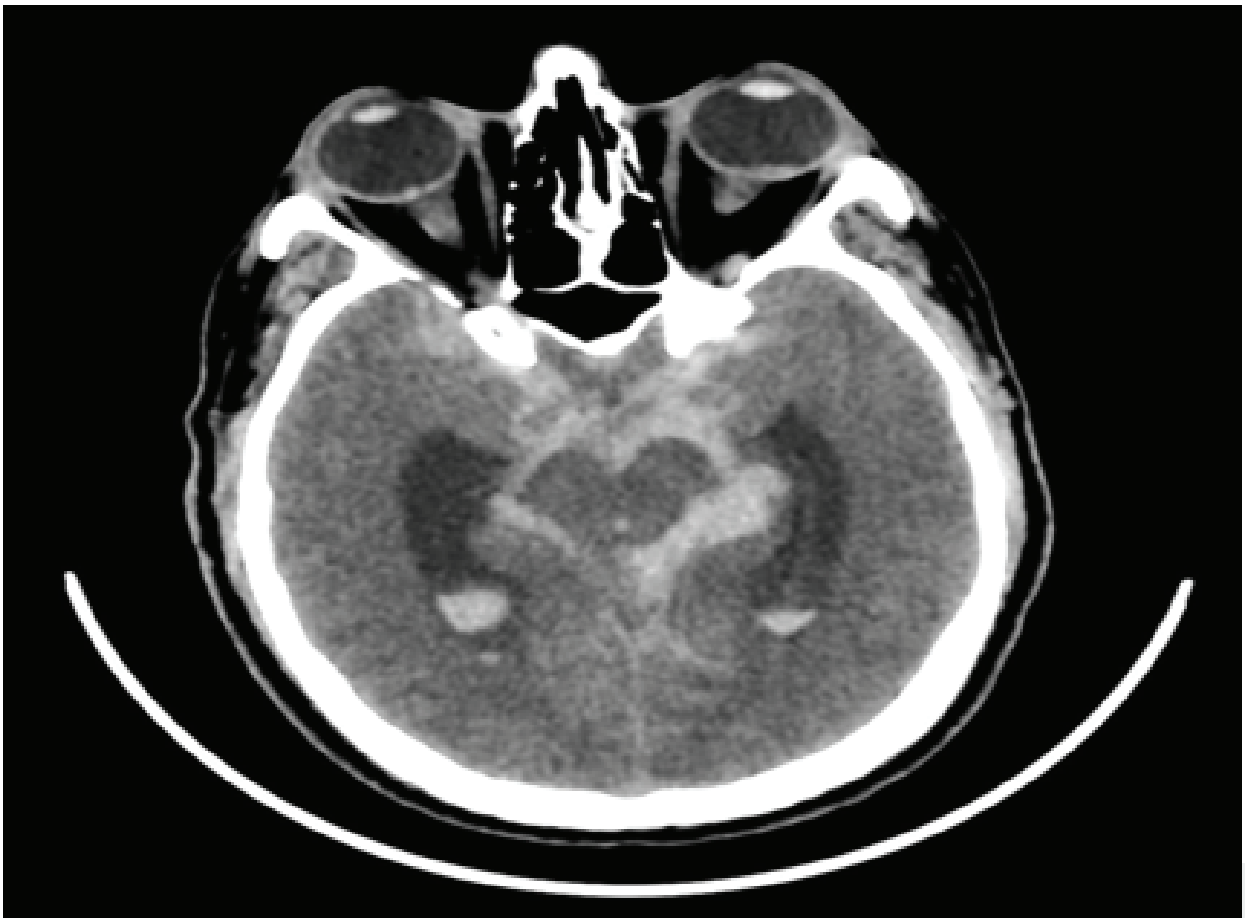

Figure1: CT brain of 1st December shows few curvilinear hyperdensities (HU~ 50 – 60) noted involving the posterior aspect of the left globe within the vitreous chamber, vitreous hemorrhage on the left side.

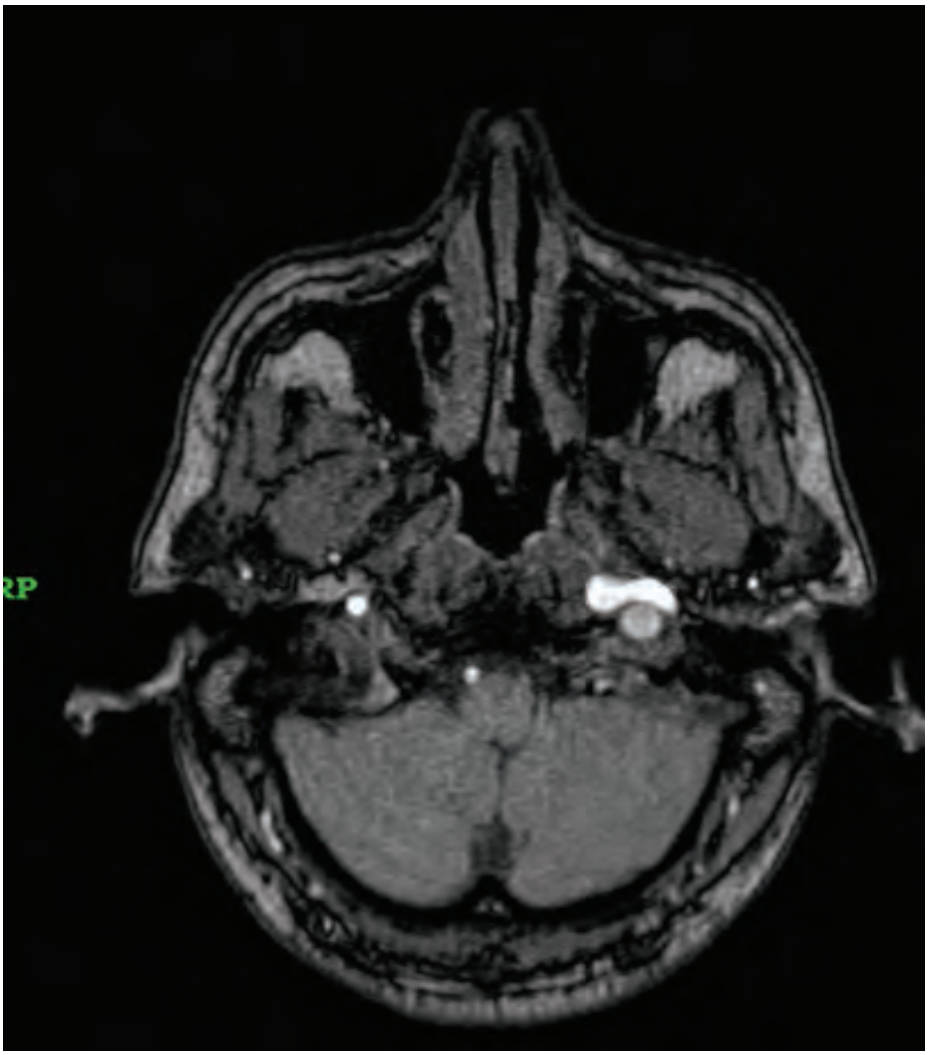

Figure 2: MRA 31st October showing ICA aneurysm

Table 1: Timeline of Events and Imaging Findings

27 Oct 2025	Acute–subacute SAH with diffuse cerebral edema
31 Oct 2025	MRI/MRA – Multiple intracranial aneurysms
1 Dec 2025	Massive re-bleed with IPH, IVH, SDH, hydrocephalus, and vitreous hemorrhage (Terson syndrome)

CONCLUSION

Terson's syndrome though expected is commonly goes undiagnosed in patients with SAH ,other intracerbral hemorrhages and aneurysms leading to permanent visual morbidities despite treatment .This case is reported to highlight the importance of orbital imaging and ophthalmic evaluation in such patients.

Declaration of patient consent: The authors confirm that all necessary patient consent forms have been obtained. In these forms, the patient provided consent for their images and clinical information to be reported in the journal. The patient understand that their names and initials will not be published and that every effort will be made to maintain anonymity, although complete confidentiality cannot be guaranteed.

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Nil.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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