

Terson Syndrome Detected by Non-Contrast CT in a Context of Severe Intracranial Hemorrhage: A Case Report

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Article History

Received: 18-07-2025

Accepted: 27-07-2025

Published: 02-08-2025



Abstract:

Terson syndrome refers to intraocular hemorrhage secondary to acute intracranial hypertension. Often underdiagnosed in the context of subarachnoid hemorrhage, it can be detected through careful evaluation of the ocular globes on CT imaging. We report the case of a 44-year-old man with signs of intracranial hypertension whose non-contrast cerebral CT revealed indirect features suggestive of Terson syndrome, highlighting the importance of systematic orbital assessment in neuroimaging.

Keywords: Terson syndrome, Intraocular hemorrhage, Intracranial hypertension, Subarachnoid hemorrhage.

Case Report

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INTRODUCTION

Terson syndrome is defined as intraocular hemorrhage secondary to sudden elevation of intracranial pressure. Although frequently encountered in patients with subarachnoid hemorrhage (SAH), it remains underdiagnosed and often overlooked [1]. Clinically, it may manifest as sudden visual loss, often bilateral, which may go unnoticed in comatose or ICU patients. Therefore, systematic ophthalmologic examination is essential following SAH [3]. Fundoscopy typically reveals vitreous, preretinal, or subhyaloid hemorrhages. Pars plana vitrectomy (PPV) is currently a safe and effective surgical treatment for persistent vitreous hemorrhage in patients with Terson syndrome [2].

Case Report

A 44-year-old man was referred to the radiology department for brain CT due to signs of intracranial hypertension.

The examination was performed using a 64-slice multidetector CT scanner, following a standard non-contrast brain protocol. Axial thin slices were acquired and reconstructed in sagittal

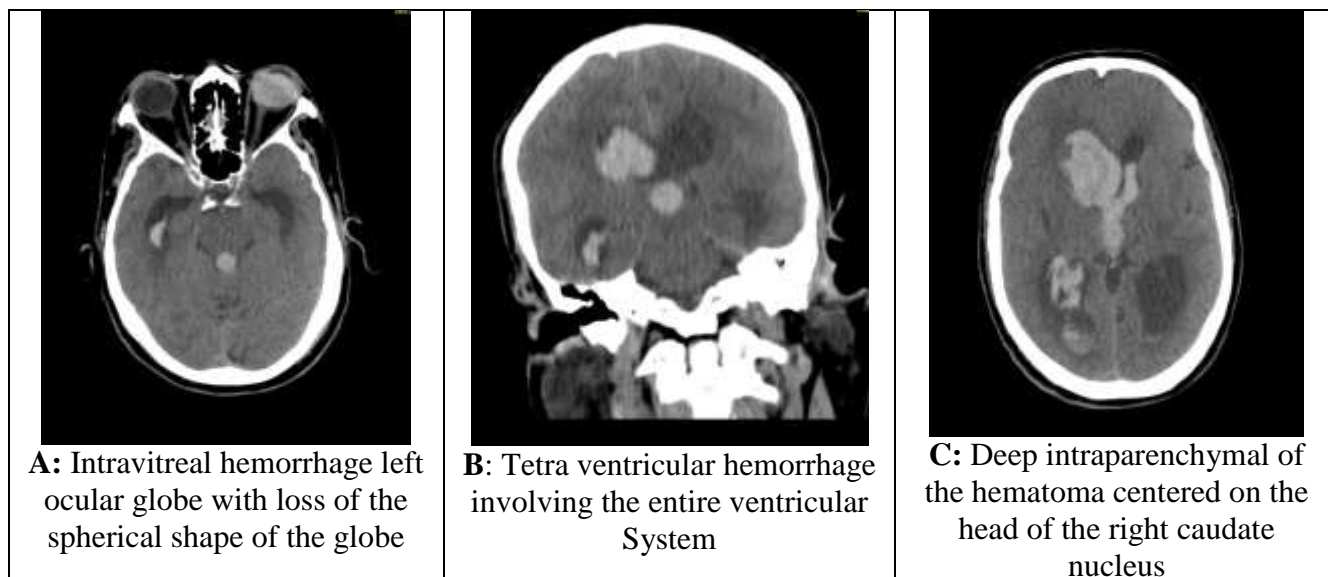
and coronal planes (slice thickness: 0.5 mm). Image interpretation was carried out using parenchymal and bone window settings.

The diagnosis of Terson syndrome was suspected based on bilateral spontaneous hyperdensity within the vitreous bodies, not adherent to the retinal interface, in a clinical context of intracranial hemorrhage.

Findings:

- Deep intraparenchymal hematoma centered on the head of the right caudate nucleus, spontaneously hyperdense, surrounded by mild perilesional edema, causing mass effect on the frontal horn of the ipsilateral lateral ventricle, which appeared collapsed.
- Tetraventricular hemorrhage involving the entire ventricular system.
- Resulting mass effect on midline structures with subfalcine herniation (right-to-left shift: 10 mm).
- Intravitreal hemorrhage of the left ocular globe with loss of the normal spherical shape of the globe.

Citation: S. Bah *et al.*, (2025 August). Terson Syndrome Detected by Non-Contrast CT in a Context of Severe Intracranial Hemorrhage: A Case Report. *ISR J Med Case Rep*, 1(4), 74-75.



DISCUSSION

Cerebral CT is the gold standard for emergency evaluation of suspected SAH or elevated intracranial pressure. While Terson syndrome is primarily diagnosed by ophthalmological assessment, CT imaging can provide indirect signs suggestive of the diagnosis, particularly in unresponsive or non-cooperative patients.

Orbital assessment on brain CT using parenchymal window settings may reveal spontaneous hyperdensity within the vitreous, consistent with vitreous hemorrhage. This may appear as a fluid level, diffuse vitreous opacity, or dense material in the posterior globe, usually unilateral but sometimes bilateral [4, 5].

Although less sensitive than ocular ultrasound or OCT for detecting intraocular hemorrhage, non-contrast CT is readily available and noninvasive. When interpreted in the right clinical context, especially in patients with severe aneurysmal SAH, it can suggest the presence of Terson syndrome [6].

Thus, while CT is not a direct diagnostic tool for Terson syndrome, it plays a complementary role in identifying potential ocular involvement, justifying prompt specialized ophthalmologic evaluation [7].

CONCLUSION

Terson syndrome, though rare, represents a significant ophthalmologic complication of intracranial hemorrhages, particularly of

subarachnoid origin. This case highlights the importance of careful assessment of the ocular globes on cerebral CT slices, even in the absence of contrast. Early identification is critical for both visual prognosis and diagnostic orientation.

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