Terson’s Syndrome: Never Let It Slide!
(A Case Report)

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ABSTRACT

Terson’s syndrome is defined by an intraocular (vitreous, retinal or retrohyaloid) hemorrhage, consequent to an acute intracranial bleeding or a sudden elevated intracranial pressure. Undiagnosed early, Terson’s syndrome can be responsible for serious ocular complication that can leads to complete vision loss.

We report a 57 year old patient representing Terson’s syndrome after an acute rupture of an aneurysm of the right sylvian artery. The rapid diagnosis and management of Terson’s syndrome in our patient’s case allowed for a quick recovery and a better prognosis. Therefore, the importance of always thinking of Terson’s syndrome a a possible diagnosis upon such clinical presentation.

Keywords: Macula subarachnoid hemorrhage, ocular hemorrhage, Terson's syndrome, trauma.

I. INTRODUCTION

Terson’s syndrome (TS) is known as an acute vitreous, retrohyaloid, retinal and/or sub retinal hemorrhage following a subarachnoid/ intracerebral bleeding or a traumatic brain injury [1].

The pathogenesis of this syndrome has been quite controversial. Two mechanisms, however, have been admitted [2]. Either subarachnoid hemorrhage can leak directly to the intraocular spaces and the retinal layers through the optic nerve sheath [3]. Or, more commonly, an acute increase in intracranial pressure can lead to a raise of intraocular venous pressure causing the thin retinal capillaries to bleed [4].

Suspecting Terson’s syndrome upon acute intraocular hemorrhage can be quite challenging, since there are many other differential diagnoses that can make TS hard to remember at first sight. The purpose of our clinical case it to resurface this pathological entity among very possible causes of intraocular bleeding, and thus by describing, throughout our patient, the different clinical and paraclinical features of TS, as well as its management modalities and prognosis.

II. CASE REPORT

A 57-year-old woman is referred to ophthalmology department after accusing a sudden vision loss. The patient had had recently a surgery for a ruptured intracranial aneurysm.

Two weeks prior to the decrease of her visual acuity, the patient was admitted to the neurosurgery department for acute severe headaches and a clinical meningeal syndrome. A cerebral ct scan was conducted revealing a bleeding zone in the right sylvian fissure (Fig. 1). An angio-MRI was then run showing a ruptured aneurysm of the right sylvian artery (Fig. 2). The patient underwent a successful neurosurgery, only to accuse 15 days later an acute vision loss.

Upon the ophthalmological examination, the initial visual acuity was of hand movements. Slit lamp exam showed no abnormalities in the anterior segment of the right eye. However, the fundus visualization was unattainable due to a very dense vitreous hemorrhage. We conducted then a B-scan eye echography that showed hyperchoic condensation compatible with vitreous blood organization without any retinal detachment (Fig. 3).

The left eye was normal. We excluded all other possible differential diagnoses such as:

- Head trauma: no history of cranial trauma was spotted.
Advanced diabetic retinopathy: the patient has no history of diabetes; blood tests were normal and the other eye’s examination was normal.

- Blood cells abnormalities: hemoglobinopathies, blood cancer etc. No record of such pathologies is known and the blood test results were normal.
- Anticoagulant medication: none taken.

Therefore, we settled for Terson’s syndrome upon the patient’s medical history and the clinical findings.

After 3 months follow up, best corrected visual acuity of the right eye improved to 8/10 and the vitreous hemorrhage decreased to a simple vitreous blur that disappeared completely after 6 months follow up, increasing the BCVA to 10/10 in the right eye.

III. DISCUSSION

Terson’s syndrome was first described in 1881 by German ophthalmologist Litten, then by the French Albert Terson in 1900 who described a pathological entity in which subarachnoid hemorrhage is associated with vitreous hemorrhage, taking, thus, his name [5].

It is now known to be an intraocular hemorrhagic syndrome associated with an intracranial bleeding (subarachnoid, intracerebral, traumatic brain injury). The hemorrhage can be in the vitreous, the retinal layers or retrohyaloid.

The exact pathogenesis of Terson's syndrome is still unclear. However, two possible theories have been now admitted. Either the bleeding is transmitted directly from intracranial hemorrhage through optic nerve sheaths and into the retinal and vitreous spaces, or, most commonly, the sudden elevation of intracranial pressure causes the raise of intraocular venous pressure which leads to the rupture of small thin retinal capillaries. This could be responsible for a retinal, retrohyaloidal or vitreous hemorrhage [6].

Almost 19% of patients with subarachnoid hemorrhage suffer a Terson's syndrome [7] and 5.5% of non-traumatic and non-diabetes related intraocular bleeding is believed to be caused by Terson's syndrome [8], which makes of it a quite frequent cause for intraocular hemorrhage.

The association of Terson’s syndrome and cerebral vascular aneurysm is now clear. Three studies confirmed the higher risk of Terson's syndrome in patients with intracranial vascular aneurysm [9]-[11]. However, the correlation of aneurysm site and elevated rate of Terson's syndrome is still controversial. Reference [9] concluded to a valid association of anterior circulation’s aneurysm and Terson’s syndrome while other studies showed no relationship between the aneurysm location and the occurrence of Terson's syndrome [12], [13].

Vision loss in Terson's syndrome is variable. It is mostly related to the extent of intraocular bleeding, the amount of intracranial pressure elevation and the speed of blood accumulation in the eye [14].

Initially, the intraocular bleeding is superficial and mainly subretinal or intraretinal. The vitreous and retrohyaloid hemorrhage is usually seen weeks after the intracranial bleeding [15].

The diagnosis of Terson's syndrome is based mainly on fundoscopic examination. B-scan is used to confirm the vitreous hemorrhage when viewing the fundus is difficult or impossible (neurological impairment of some patients). Ct scan is quite useful for early diagnosis of Terson's syndrome, as, according to Swallow et al., retinal hyperechoic densities can be seen in the initial orbito-cerebral ct scan and that’s before eye examination [16].

Many complications have been reported as sequelae to Terson's syndrome. Epioretinal membrane is the most common complication of the syndrome with an incidence that could rise to 78% [17]. Retinal folds, retinal detachment and ghost cell glaucoma are other possible aggravation of Terson's syndrome with a consecutive incidence of 20%, 9% and 4% [18]-[20]. Two cases of macular hole after Terson's syndrome have been reported, they were discovered during vitrectomy for vitreous hemorrhage [21]. Furthermore, blood toxicity over retinal’s photoreceptors, especially the first 7 days of...
Intraocular bleeding, is now well demonstrated [22] making a late diagnosis of Terson's syndrome a risk factor for its poor prognosis.

Although it resolves spontaneously, intraocular hemorrhage may persist in 50% of cases, as reported, and requires by then a surgical intervention [14]. As vitreous hemorrhage is the most frequent clinical expression of Terson's syndrome, vitrectomy may be needed in some cases. There is no general rule for the optimal time of conducting a vitrectomy, however many studies showed that it is best to remove the hemorrhagic vitreous within 90 days of Terson's syndrome evolution for a better visual acuity outcome [23]. Vitrectomy can be scheduled earlier in young patients with ambiopia risk or if Terson's syndrome affects both eyes [24].

Many factors influence the final prognosis of Terson's syndrome: patient’s age, bilateral intraocular bleeding, pre and post operative complications. Some authors even suggest syndrome evolution for a better visual acuity outcome [23]. Therefore, an early and proper approach of Terson's syndrome is mandatory for a best final visual acuity and even a better neurological prognosis.

IV. CONCLUSION

Terson's syndrome is a serious eye condition that should be always and earnestly thought of upon intraocular bleeding associated with a neurological hemorrhage or elevated intracranial pressure, so that many ocular complications can be avoided and a better prognosis can be provided.

CONFLICT OF INTEREST

Authors declare that they do not have any conflict of interest.

REFERENCES


