Acute Vision Loss Secondary to Epidural Blood Patch: Terson Syndrome

Gabriel L. Pagani-Estévez, M.D. 1, John J. Chen, M.D., Ph.D. 2, James C. Watson, M.D. 1,3, Jacqueline A. Leavitt, M.D. 2, Departments of Neurology 1, Neuro-ophthalmology 2, Anesthesiology, Pain Medicine 3
Mayo Clinic, Rochester, Minnesota

Abstract

Objectives: Lumbar epidural blood patch (EBP) is a commonly used procedure to treat post-dural puncture headache (PDPH). With the risk of vision loss immediately following an EBP, the study goals were to describe Terson syndrome, a syndrome of retinal and vitreous hemorrhage, following EBP and to review the literature of Terson’s following epidural space injection.

Case: A 49 year-old female with a history of idiopathic intracranial hypertension received an EBP for PDPH at an outside facility without fluoroscopic guidance and in the seated position. The patient experienced syncope during the procedure as 25 cc of autologous blood was rapidly injected, but needle tip location was unclear. Fundus examination revealed significant bilateral retinal and vitreous hemorrhage consistent with Terson syndrome.

Discussion: This patient developed Terson syndrome as an immediate EBP complication. Ophthalmologic Terson syndrome has been previously described with epidural space saline and amniotic injections, but not EBP. Out of 11 reported cases, 5 were female and 9 had complete vision recovery. Previous studies have demonstrated that epidural space injection increases subarachnoid pressure in a volume and rate-dependent fashion. An abrupt increase in subarachnoid space pressure likely led to retinal hemorrhage by compromising retinal venous drainage. This is the first known case of Terson syndrome causally EBP. Injection volume should be minimized and a slow rate of injection pursued.

Conclusions: The anesthesiologist, pain interventionist and ophthalmologist should be aware of this rare but disabling complication and consider taking prophylactic measures when consenting patients for EBP with vision compromise or comorbidities concerning for elevated intracranial pressure.

Figure 1

Figure 2

Table 1: Terson After Epidural Injection Review Table

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Optical coherence tomography (OCT) showed deep retinal pigment epithelium (solid line) and superficial hemorrhages (dashed lines) in both right and left (bottom) eyes.

Therapeutic Action:

- While early vitreous was hazardous vision loss is advocated for by some, the vitreous hemorrhage was not severe enough to justify removal. Conservative management was provided

- Her vision has spontaneously improved over time

References


Discussion

- Terson syndrome is combined retinal and vitreous hemorrhage. This is the first known reported case of Terson’s following EBP.
- In 11 cases of Terson have been reported following lumbar epidural saline and steroid injection. 10 were female and 8 had complete vision recovery over a time span ranging from 3 months to 3 years.
- Pathophysiology likely involved a rapid increase in subarachnoid space pressure compromising venous drainage from the eye. Since Terson has been reported following epidural steroid injection, direct tracking of blood along the optic nerve sheath was not the favored mechanism. The vitreous humor also does not communicate with the subarachnoid space.
- Studies have shown that lumbar epidural injection increases subarachnoid pressure in a volume and rate-dependent fashion. After epidural injection, epidural pressure increased by 65 cm H2O and subarachnoid subpressure peaked at 85 cm H2O.
- In all possible the patient’s history of idiopathic intracranial hypertension predisposed her to this complication. The syncope could have resulted from an abrupt increase in IOP and a vasovagal reaction. The seated position can increase IOP throughValsalva and increased intra-abdominal pressure and should potentially be avoided.
- Minimal intraventricular pressure and a very slow rate of infusion should be pursued.
- The anesthesiologist and pain interventionist should be aware of this rare complication and consider taking additional precautions in patients with vision compromise or comorbidities concerning for elevated intracranial pressure.

Figure 2

Optical coherence tomography (OCT) showed deep retinal pigment epithelium (solid line) and superficial hemorrhages (dashed lines) in both right (top) and left (bottom) eyes.

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References

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