

Restricted Diffusion in Bilateral Septic Superior Ophthalmic Vein Thrombosis

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Introduction: Superior ophthalmic vein thrombosis (SOVT) is a rare vascular disorder impacting a critical venous conduit from the orbit and adjacent tissues. Impaired SOV drainage causes venous congestion and may disturb orbital perfusion. It typically presents with ophthalmalgia, proptosis, periorbital swelling, and conjunctival congestion. Prompt diagnosis and management of SOVT is essential for vision preservation. However, early diagnosis can be difficult, particularly with subtle clinical signs. This case study presents a rare presentation of bilateral SOVT due to septic thrombi of odontogenic cause detected using diffusion weighted imaging (DWI), a specialized form of MRI elucidating the diffusion of water in physiologic tissue.

Methods: N/A (case report submitted)

Results: "A 49-year-old male presented with a two-day history of severe left periorbital edema, conjunctival injection, and chemosis with a three-week history of ipsilateral odontogenic pain. The right eye began demonstrating signs of conjunctival chemosis, hyperemia, and periorbital edema two days later. IOP was within normal range OU, and disk edema and retinal vein dilation were absent on fundus examination. Blood cultures returned positive for *Streptococcus constellatus*, raising suspicion of a bacteremia from odontogenic source.

Findings: MRI revealed irregular enlargement of the SOV OU (OS>OD). Left SOV demonstrated dilation, intraluminal filling defect and wall enhancement. DWI revealed a spontaneous intense hypersignal within the left SOV exhibiting restricted diffusion, without involvement of the cavernous sinuses. There was a corresponding area of hypointensity on apparent diffusion coefficient maps, confirming the DWI signal reflected true restriction in diffusion.

Management: These findings suggested a bacteremia from odontogenic source and an associated septic SOVT. Triple regimen antibiotics were administered alongside low weight molecular heparin. Symptoms reduced the following day and resolved to baseline within eight days."

Conclusion: SOVT is a rare but sight-threatening condition. Initial presentation may be subtle, but prompt diagnosis is necessary for preservation of vision. This study is among few that demonstrate the impact of DWI in elucidating SOVT and potentially an underlying etiology, providing critical insight for effective management.