

Pars Plana Vitrectomy in Tuberculous Endophthalmitis: A Case Report

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ABSTRACT

Introduction: Ocular tuberculosis (TB) is an extrapulmonary mycobacterial disease with varied manifestations. Endophthalmitis is a severe manifestation with a rapid progression that may lead to intraocular tissue destruction and panophthalmitis. This study aimed to report a case of tuberculous endophthalmitis treated with pars plana vitrectomy (PPV). **Case presentation:** A 57-year-old male patient with TB endophthalmitis. The follow-up period was 6 months. The diagnosis was made on a clinical basis, and the specific etiology was confirmed by TST and IGRA tests. The diagnosis of ocular TB was delayed by one year. He had bilateral endophthalmitis with severe inflammation. The right eye (OD) was blind, and the left (OS) had best-corrected visual acuity (BCVA) of hand motion. Intraocular pressure (IOP) was elevated in both eyes. B-scan disclosed hyperreflective exudate, filling 1/3 of the vitreous cavity in OD, and vitritis and intravitreal hemorrhage in OS. We commenced triple antitubercular therapy. 23G PPV with silicone oil and phacoemulsification with IOL implantation were done. The intraocular inflammation in OS decreased postsurgically, and in one month, BCVA was 20/200 and IOP was within normal limits. **Conclusion:** Endophthalmitis is an indication for therapeutic vitrectomy. The risks of surgery seem to be lower than the benefits, including a decent chance for visual improvement and avoidance of enucleation. In our case, 23G PPV with phacoemulsification seemed to be beneficial in decreasing the level of inflammation, improvement of visual acuity, reduction of IOP, and preservation of the eye.

1. Introduction

Tuberculosis (TB) is still a major public health problem and a leading cause of death and morbidity worldwide. Ocular TB is an extrapulmonary mycobacterial disease with varied manifestations. The World Health Organization currently estimates that about one-quarter of the world's population is infected by tuberculosis, with 5-15% of the affected being symptomatic and the rest having latent TB. TB affects tissues with high oxygen concentrations, most commonly the lungs (in 80% of patients).¹ In the remaining 20%, the disease may affect other organs, such as the eye, in which the choroid has one of the highest levels of oxygenation in the body.¹ Approximately 1% to 2% of patients with TB show ocular involvement in different ocular structures.

However, most of the patients with ocular TB do not have evidence of pulmonary TB¹, and it can have a similar course to any other ocular inflammatory disease. TB infection with ocular involvement should always be considered in the differential diagnosis of uveitis.

Uveitis is the most common form of ocular TB, and it may involve any part of the uveal tract.² Endophthalmitis is a severe manifestation with a rapid progression that can lead to intraocular tissue destruction and panophthalmitis.^{3,4} Therapy is usually conservative with antitubercular antibiotics combined with corticosteroids.³ In cases with endophthalmitis, in which the risk of imminent visual loss is very high, surgical options should be discussed, including pars plana vitrectomy (PPV). PPV has

become a first-line therapeutic procedure for multiple conditions. Bacterial endophthalmitis has been an indication of therapeutic PPV. However, there have been only a few case reports describing surgery in tuberculous endophthalmitis, and there have been none from Bulgaria.⁵⁻⁷ This study aimed to report a case of tuberculous endophthalmitis treated with pars plana vitrectomy (PPV).

2. Case Presentation

A 57-year-old Caucasian man presented to us with complaints of severe pain, loss of vision, and redness in both eyes. His complaints had started one year before with blurry vision, redness, pain, and inflammation in the right eye (OD). Then, OD was treated with YAG-laser iridotomy and periocular

corticosteroids for uveitis with secondary angle closure, but despite those measures, the disease had led to a complete loss of vision. He had had a positive Mantoux test (TST) with an induration of 16 mm, but no antitubercular therapy had been commenced. His review of systems revealed advanced cirrhosis with esophageal varices, chronic obstructive pulmonary disease, arterial hypertension, and heart failure. The patient did not have clinical or radiological signs of extraocular TB. For about 1 month before presenting to our clinic, the vision had been deteriorating in the left eye (OS) as well. His best corrected visual acuity (BCVA) was hand motion OS and no light perception OD. OD had intraocular pressure (IOP) of 50 mmHg and OS – 30 mmHg. OD had corneal edema, seclusion, and occlusion of the pupil and iris bombe (Figure 1).

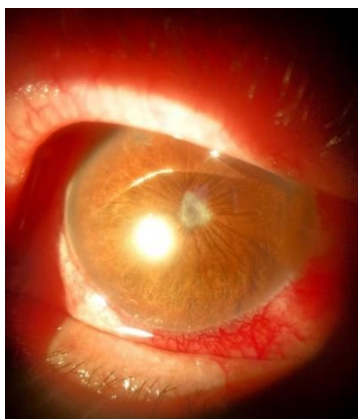


Figure 1. Anterior segment of OD: conjunctival injection and subconjunctival hemorrhage, seclusion and occlusion of the pupil, iris bombe.

OS had corneal edema, 4+ cells and flare, hypopyon, posterior synechiae, complicated cataract, and dense vitritis. B-scan disclosed hyperechogenic

exudate filling 1/3 of the vitreous cavity in OD (Figure 2) and hemophthalmos with vitritis in OS (Figure 3).

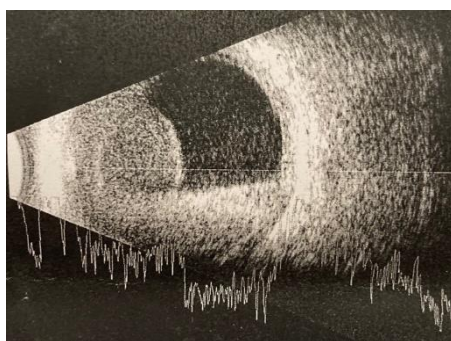


Figure 2. B-scan of OD: mature complicated cataract, vitreous hemorrhage, hyperechogenic exudate.

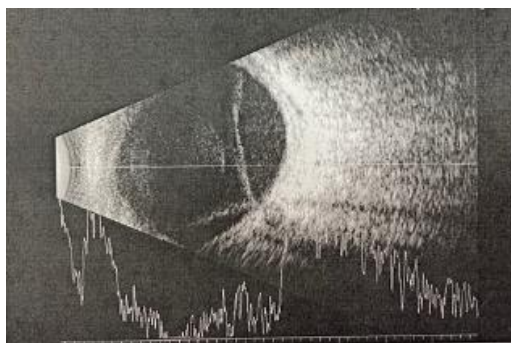


Figure 3. B-scan of OS: posterior hyaloid attached to the optic nerve head, vitritis, and hemophthalmos.

The patient received a 7-day empiric treatment with ceftriaxone 1g IV b.i.d., gentamycin 2x80 mg IM q.d., fluconazole 200 mg IV q.d., topical antibiotics, topical corticosteroids, and antiglaucomatous therapy before his specific test results became available. On the seventh day, he had a slight improvement of the inflammatory process with no hypopyon in the anterior chamber, but he tested positive for TB on TST and IGRA (T-spot.TB). 23G PPV with silicone oil tamponade and phacoemulsification with implantation of IOL were done as therapeutic procedures. Intraoperative observation showed vitreous hemorrhage and vitritis, as well as small retinal tears in the mid-periphery, which were treated with endolaser photocoagulation. The patient had started treatment with triple antituberculous agents orally one day before the PPV- isoniazid 200 mg q.d., ethambutol 750 mg q.d., and rifampin 300 mg q.d. Vitreous cultures were negative for other bacterial or fungal pathogens. The intraocular inflammation gradually decreased, and after one month, he had a BCVA 20/200 of OS. Six months following the surgical procedure, OS did not show signs of inflammation on tuberculostatic therapy and 1 drop of topical dexamethasone. IOP was within normal limits. There were no postsurgical complications.

3. Discussion

Endophthalmitis is a medical emergency with a guarded visual prognosis, and appropriate therapy, including surgical interventions, should be instituted as soon as possible.^{8,9} Our patient presented relatively late - about 1 year after the beginning of symptoms.

The complications that developed were complete blindness of OD and low vision of OS. The prognosis in TB endophthalmitis has generally been poor. Antaki et al.⁴ made a review of 44 patients with TB endophthalmitis. They reported poor ocular outcomes in 83.7% of the cases, necessitating either enucleation, evisceration, or exenteration.⁴

Regarding conservative management, the recommendations of the American Thoracic Society, the Centers for Disease Control and Prevention, and the Infectious Diseases Society of America include treatment of extrapulmonary and pulmonary TB with four drugs - isoniazid, rifampicin, pyrazinamide, and ethambutol for 8 weeks, and two drugs - isoniazid and rifampicin for at least another 18 weeks.^{10,11} Our patient consulted with a pulmonologist about the treatment options in the setting of advanced liver cirrhosis and started triple therapy with isoniazid, rifampicin, and ethambutol.

Clinical data on the outcome of uveitis management with PPV is still limited but promising.¹²⁻¹⁴ PPV is beneficial in preserving vision and decreasing the rate of enucleation in cases of bacterial endophthalmitis by providing an earlier diagnosis and diminishing the infectious and inflammatory intraocular load.^{8,9} Our clinical approach included an urgent therapeutic 23G PPV with silicone oil tamponade and phacoemulsification with IOL implantation, regardless of the severe inflammatory reaction, combined with triple medication antitubercular treatment, which was ultimately beneficial in decreasing the level of inflammation,

improvement of BCVA, reduction of IOP, and preserving the eye. We elected to use silicone oil tamponade because we felt that there was an increased risk of postoperative retinal detachment due to the intense preoperative inflammation and the presence of retinal tears peripherally.¹³⁻¹⁵ Six months following surgery, the uveitis in OS was quiescent on tuberculostatic antibiotics and one drop of topical dexamethasone. There were no surgical complications. Other authors have also reported improvement in tuberculous endophthalmitis with PPV.⁵⁻⁷ Hase et al.,⁵ for example, reported a case of unilateral TB-endophthalmitis, successfully treated with PPV and antitubercular combined therapy. Seth et al.,⁶ have treated successfully a case of bleb-related TB endophthalmitis following combined phacoemulsification and trabeculectomy with mitomycin C with PPV.⁶ Mehta et al.,⁷ have also published a report of postcataract surgery endophthalmitis due to *Mycobacterium tuberculosis*, in the successful management of which a vitrectomy was also done.

4. Conclusion

Endophthalmitis is an indication of therapeutic PPV. The risks of surgery seem to be lower than the benefits, including a decent chance for visual improvement and avoiding enucleation. In our patient with ocular tuberculosis, 23G PPV with phacoemulsification was beneficial for decreasing the level of inflammation, improvement of visual acuity, reduction of IOP, and preservation of the eye.

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