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Anti-Tubercular Therapy Induced Optic Neuritis: A Case Report

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ABSTRACT

Optic neuritis is a rare but serious complication of anti-tubercular therapy (ATT), particularly associated with ethambutol. This case report describes a 32-year-old female who developed bilateral optic neuritis two months after initiating ATT for pulmonary tuberculosis. The patient presented with sudden onset of blurred vision in both eyes. Prompt recognition of the condition, immediate discontinuation of ethambutol, and appropriate management led to significant visual recovery. This case highlights the importance of regular ophthalmological monitoring in patients undergoing ATT and the need for immediate intervention upon suspicion of optic neuritis.

KEYWORDS: Optic neuritis, Ethambutol toxicity, Anti-tubercular therapy, Tuberculosis

INTRODUCTION

Tuberculosis remains a significant global health concern, with an estimated 10 million new cases worldwide in 2019 [1]. The standard first-line treatment for drug-susceptible tuberculosis includes a combination of isoniazid, rifampicin, ethambutol, and pyrazinamide [2]. While generally effective, this regimen can lead to various adverse effects, including ocular toxicity.

Ethambutol-induced optic neuritis is a well-documented but uncommon side effect, occurring in approximately 1-5% of patients receiving standard doses [3]. The exact mechanism of ethambutol's toxic effect on the optic nerve remains unclear, but it is thought to involve disruption of mitochondrial function and oxidative phosphorylation in retinal ganglion cells [4]. This case report presents a patient who developed bilateral optic neuritis secondary to ethambutol toxicity, emphasizing the importance of early recognition and management of this potentially vision-threatening complication.[5]

CASE PRESENTATION

Patient Information

A 32-year-old female office worker presented to the ophthalmology department with complaints of bilateral blurred vision for five days. She reported no pain on eye movement, headaches, or other neurological symptoms.

Clinical Findings

The patient had been diagnosed with pulmonary tuberculosis two months prior and was on a standard ATT regimen consisting of:

- Isoniazid (INH): 300 mg daily
- Rifampicin: 600 mg daily

- Ethambutol: 1200 mg daily
- Pyrazinamide: 1500 mg daily

She had no history of diabetes, hypertension, or other chronic illnesses, and no known allergies.
On examination, her vital signs were within normal limits. Ophthalmological examination revealed:
- Visual acuity: Right eye 20/200, Left eye 20/100
- Sluggish pupillary reactions bilaterally
- Impaired color vision in both eyes (using Ishihara color plates)
- Bilateral optic disc swelling on fundoscopy

Diagnostic Assessment
Further investigations included:
- Visual field testing: Revealed central scotoma in both eyes
- MRI brain and orbits: Normal, ruling out space-occupying lesions or demyelinating diseases
- Blood tests: Complete blood count within normal limits; slightly elevated transaminases; normal renal function tests. [6]
Based on the clinical presentation and investigations, a diagnosis of anti-tubercular therapy induced optic neuritis, likely due to ethambutol toxicity, was made.

Therapeutic Intervention
The following treatment plan was initiated:
1. Immediate discontinuation of ethambutol
2. Continuation of other anti-tubercular drugs under close monitoring
3. Oral prednisolone 1 mg/kg/day for 2 weeks, followed by a tapering dose
4. Vitamin B complex supplementation

Follow-up and Outcomes
❖ At the 1-week follow-up:

- Visual acuity improved to 20/60 in both eyes
- Optic disc swelling reduced
❖ At the 1-month follow-up:
- Visual acuity further improved to 20/30 in both eyes
- Color vision improved but not fully recovered
- Visual fields showed significant improvement

DISCUSSION
This case illustrates the potential for serious ocular toxicity in patients undergoing ATT, particularly with ethambutol. The bilateral nature of the optic neuritis, its temporal relationship with ATT initiation, and the improvement following ethambutol discontinuation strongly support the diagnosis of ethambutol-induced optic neuritis.
Early recognition and prompt discontinuation of the offending drug are crucial for visual recovery [5]. In this case, the rapid intervention likely contributed to the favorable outcome. The use of corticosteroids in ethambutol-induced optic neuritis is controversial, but some studies suggest a potential benefit in hastening recovery [6].
This case underscores the importance of baseline and regular ophthalmological examinations for patients on ethambutol. Patients should be educated about potential visual symptoms and the need for immediate reporting. Alternative ATT regimens should be considered in patients with pre-existing visual impairment or those at high risk of ocular complications [7].

CONCLUSION
Ethambutol-induced optic neuritis is a serious but potentially reversible complication of ATT. This case report highlights the importance of vigilance in monitoring for ocular toxicity in patients on ATT. [8] Early recognition, prompt discontinuation of ethambutol, and appropriate management can lead to significant visual recovery. Regular ophthalmological check-ups and patient education are crucial in preventing and managing this complication. [9,10]

Declaration by Authors
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