



A Review of Ethambutol Optic Neuritis (EON) : A Case Description

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I. Introduction-

Tuberculosis, often referred to as TB, is a contagious bacterial infection that primarily affects the lungs. The disease is caused by the bacterium *Mycobacterium tuberculosis*, which can also affect other parts of the body including the kidneys, spine, and brain. Tuberculosis has been a major public health concern for centuries and continues to be a leading cause of illness and death worldwide. The symptoms of active tuberculosis can be varied and nonspecific, making it difficult to diagnose. Common symptoms include a persistent cough, chest pain, coughing up blood or sputum, fatigue, weight loss, fever, and night sweats. In some cases, tuberculosis can also affect other parts of the body, leading to symptoms such as back pain, joint pain, and neurological symptoms.

Diagnosing tuberculosis typically involves a combination of medical history, physical examination, imaging studies, and laboratory tests. One of the most common tests for tuberculosis is the tuberculin skin test, also known as the Mantoux test, which involves injecting a small amount of tuberculin under the skin and then checking for a reaction after 48 to 72 hours. Another test, known as the interferon-gamma release assay (IGRA), measures the body's immune response to the tuberculosis bacteria. In addition, chest X-rays and sputum tests can help confirm the diagnosis of active tuberculosis.

In recent years, the rise of drug-resistant tuberculosis has become a major concern, particularly in regions with high rates of HIV infection. Multidrug-resistant tuberculosis (MDR-TB) and extensively drug-resistant tuberculosis (XDR-TB) are forms of the disease that do not respond to the standard antibiotics used to treat tuberculosis. Treating drug-resistant tuberculosis requires more expensive and toxic medications, as

well as longer treatment regimens, making it a significant challenge for healthcare systems around the world.

In addition to drug-resistant tuberculosis, other challenges in the fight against the disease include the lack of access to healthcare, poverty, malnutrition, and overcrowded living conditions, all of which contribute to the spread of tuberculosis. Efforts to control tuberculosis have focused on strategies such as early detection and treatment, contact tracing, improving access to healthcare, and developing new vaccines and medications.

In recent years, research into new tuberculosis vaccines and treatments has been a focus of global efforts to combat the disease. Several new vaccine candidates are currently in development, with the goal of providing better protection against tuberculosis in all age groups. In addition, new drug regimens and diagnostic tools are being explored to improve the management of tuberculosis, particularly in resource-limited settings.

In conclusion, tuberculosis remains a significant global health challenge, with millions of new cases and deaths occurring each year. The disease has a long and complex history, and efforts to control it have been ongoing for centuries. While progress has been made in the diagnosis and treatment of tuberculosis, drug-resistant forms of the disease and other challenges continue to present obstacles to its control. Continued investment in research, public health infrastructure, and access to care is essential to reducing the burden of tuberculosis and ultimately achieving its elimination as a public health threat.



The Drug-

The drug ethambutol (EMB) is an antibiotic which is used in the treatment of infections caused by Mycobacterium species, particularly Mycobacterium tuberculosis. A drug commonly used for treating tuberculosis is EMB, one of the first-line drugs for the treatment of the disease. Usually, this drug is administered along with other drugs for the treatment of tuberculosis, such as isoniazid, rifampicin, and pyrazinamide, in order to provide the best results. Unfortunately, one serious and vision-threatening side effect of EMB is Ethambutol-Induced Optic Neuropathy (EON). The less common side effects of EMB include peripheral neuropathy, cutaneous reactions, thrombocytopenia, and hepatitis. The prevalence of EON in patients treated for tuberculosis is estimated to be 1-2%. According to the World Health Organization (WHO), there are approximately 9.2 million new cases of tuberculosis each year, 55% of which require ethambutol. The incidence of EON is about 1-2% among treated patients. The time of onset of EON usually starts between 4 and 12 months after the initiation of therapy. Early detection, withdrawal of ethambutol, and continuous ophthalmic evaluations are necessary during therapy. Clinicians should be aware of the risk of EON in any patient undergoing EMB, and a baseline eye examination is recommended prior to starting EMB to document pre-existing ocular pathology and baseline visual acuity. Prompt discontinuation of EMB in EON is critical for preventing permanent visual loss and irreversible optic atrophy.

Case Description –

A 67-year-old female who was diagnosed with latent TB weighing 56 kg on Akurit-4 of 4 tabs/day for a span of 3 months and Akurit-3 of 4 tabs/day for a span of 2 months visited the Respiratory Medicine OPD with complaints of blurred vision in both eyes. On further evaluation, the patient lost complete vision on both sides, but the color vision remained normal. Visual acuity loss was severe with no light perception. Henceforth, Ethambutol was discontinued and she was started on oral steroids and Vit.B complex supplementation. The woman was advised to have a healthy diet. After 2 months of therapy, the patient's symptoms and visual acuity improved, and regular follow-up was advised to prevent any further complications.

Differential Diagnosis –

1. Diabetic Retinopathy
2. Isoniazid Induced Optic Neuropathy