

To evaluate the role of pentoxifylline in optic atrophy induced by tuberculosis

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ABSTRACT

A 30 year female, presented two years back with complaint of gradual loss of vision in L/E followed by poor vision in R/E and she was diagnosed as having miliary tuberculosis and taken complete ATT. Patient was started on pentoxifylline 400 mg twice daily and observed after 15 days. There was rapid improvement in vision. Patient was followed up at every month for first three months and then every three monthly for two years. For this patient, treatment with oral pentoxifylline 400mg twice daily for two years led to improvement in visual acuity. The improved visual acuity in this patient suggests that pentoxifylline is an effective treatment of optic atrophy of eye in the patients with tuberculosis.

Keywords: Optic atrophy, Pentoxifylline, Tuberculosis

INTRODUCTION

Tuberculosis is disease primarily affecting lungs but proportion of cases where extra pulmonary tuberculosis has increased in recent years. It may involve CNS, CVS and abdomen. In tuberculosis, optic neuropathy is commonly manifested as papilitis (51.6 %), neuroretinitis (14.5%) and optic nerve tubercle (11.3%).¹ Uveitis had been noticed in 88.71%.¹ Vision impairment due to optic atrophy is one of the devastating complications of CNS Tuberculosis which ultimately is responsible for vision impairment. Drug induced optic neuropathy is also observed mostly after ethambutol toxicity, despite cessation of drug.²

Over the past decades there has been search for various innovative drugs to be used to improve the visual outcome in optic atrophy patients. Pentoxifylline is a drug used for intermittent claudication by peripheral arterial disease.³ It has been used in present case to increase ocular circulation in optic atrophy patient.

CASE REPORT

Ethics

The study has been conducted as per guidelines of the Declaration of Helsinki. We obtained informed consent

from the patient and the identity has not been disclosed in any form.

History

A 30 years old female, presented two years back with gradual loss of vision in L/E subsequently R/E.

Past history

Past records revealed positive history of miliary tuberculosis for which ATT was started. Sudden loss of vision in left eye followed by R/E was encountered. Patient took the medication of private practitioner. Visual recovery was not up to the mark. After one month patient was hospitalized for two weeks for the symptoms related to abdominal tuberculosis. At that time patient had a second attack of diminution of vision in L/E followed by R/E. Ethambutol drug was discontinued from regime.

Examination: On presentation her visual acuity was finger counting face in both eyes and there was red and green colour blindness. Amsler grid examination was showed paracentral scotoma in both eyes. Ocular pressure was 17.3 mm/Hg and 12.2 mm/Hg in right and left eye respectively. Detailed fundus examination showed B/E disc pallor with visible venous pulsation (Figure 1a and b). Remaining fundus was normal and no vitreous body seen.

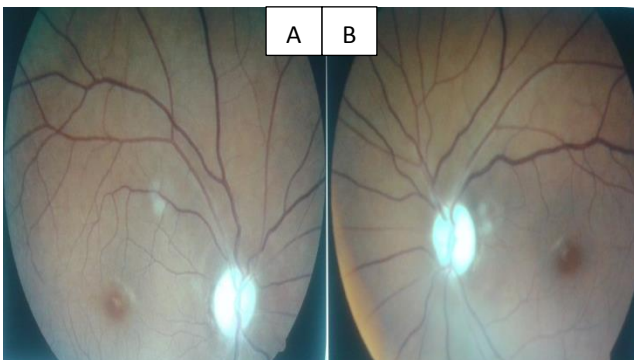


Figure 1A: Right eye fundus photograph with optic atrophy; 1B: Left eye fundus photograph with optic atrophy.

Investigation

OCT and orbit CT scan of B/E were normal.

Treatment

Patient was started on pentoxifylline 400mg two times a day along with antioxidant for 15 days. Steroids were not given. Both eyes visual acuity increased from finger counting face to 6/60. Hence same dose of pentoxifylline was continued for three months with regular monthly follow up for first three month followed by quarterly follow up for two years.

RESULTS

Patients attained 6/9 vision in right eye and 6/6 in left eye at end of two years (Table 1). Surprisingly colour vision and contrast sensitivity of patient were normal and there were no scotoma on amsler grid examination at end of two years.

Table 1: Improvement in visual acuity in consecutive follow up.

Date	Vision in right eye	Vision in left eye
25/11/2013	Finger counting face	Finger counting face
10/12/2013	6/60	6/60
12/01/2014	6/36	6/60
21/01/2014	6/36	6/24
20/06/2014	6/24	6/18
10/11/2014	6/18	6/9
05/01/2015	6/12	6/9
29/04/2015	6/12	6/6
20/07/2015	6/9	6/6

DISCUSSION

Optic atrophy is end result of the damage of optic nerve which leads to dimension of vision as well as contrast sensitivity and color vision. It is well diagnosed by triad of pallor of optic disc, diminution in visual acuity and visual field defect.⁴ In tuberculosis optic nerve involvement may accompany any uveitis or tubercular meningitis either as a direct infiltration of nerve or as an inflammatory disc edema or bilaterally because of increased intracranial pressure (papilledema). Optic atrophy after tubercular meningitis may be more common in patients with cerebrospinal fluid protein content greater than 75mg/dl. In Tubercular arachnoiditis inflammatory exudates surrounding optic nerve do not infiltrate but can produce optic neuritis per se. Periarteritis and occlusion of small vessels is frequently seen due to direct compression as well as ischemia causing neural damage. The common lesions in order of frequency are papilitis, optic atrophy and papilloedema.⁵ The most serious potential adverse effect of Ethambutol toxicity is optic or retrobulbar neuritis, which may affect one or both eyes.⁶

Pentoxifylline is a alkyl xanthine derivative 3,7- dimethyl 1-5 oxohexylaxtheme.³ It was first synthesized in 1965.⁷ It works by making red blood corpuscles more flexible, so that it improves blood flow and decrease viscosity of blood. It also inhibits the thrombocyte aggregation.⁷ Pentoxifylline belongs to a group of drugs that have a positive effect in disorders of microcirculation. Pathological changes in micro circulation of eyes are observed in number of systemic diseases such as atherosclerosis, hypertension, diabetes mellitus, tuberculosis etc. Vascular factor plays an important role

in lesions of the ocular fundus by an impairment of blood circulation, including hemorrhage and ischemic infections in retina as well as atherosclerotic chorioretinal dystrophies. These disorders of the micro vascular circulation ultimately lead to ischemic degeneration of tissues of optic nerve and retinal nerve fiber layer.

Use of pentoxifylline for therapeutic purpose in the case of eye pathology as revealed its substantial effectiveness in disorder of the blood circulation associated with stenosing atherosclerosis. The drug indicated in acute and chronic vascular disorders. It is effective when taken orally and parenteral administration. In a comparative study the effectiveness of pentoxifylline on basis of oxygenation of eye tissues is more in retrobulbar than in subconjunctival instillation or intravenous administration. So it is mainly used in thrombosis of central retinal vein of retina and its branches, atherosclerotic dystrophy, Diabetes mellitus and complicated myopia.

As pentoxifylline modify the microvasculature and thus increases the blood circulation and oxygenation of optic nerve, visual improvement is observed in our patient.

CONCLUSION

The improved visual acuity in this patient suggests that pentoxifylline is an effective treatment of optic atrophy of eye in the patients with tuberculosis.

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Ethical approval: Not required

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