# VISUAL IMPAIRMENT AND BLINDNESS IN OCULAR TOXOPLASMOSIS CASES

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**Abstract.** Ocular toxoplasmosis is a common vision-threatening disease in Indonesia. Diagnosis of this disease is based on characteristic ophthalmoscopic appearances and laboratory findings. Between 1985 and 1989, the authors retrospectively evaluated 41 children under 12 years of age. Thirteen cases had retinal lesions suspected to be toxoplasmosis but the laboratory findings were negative. The remaining 28 children had a total of 41 eyes diagnosed as ocular toxoplasmosis. Of the 41 affected eyes, vision had decreased to finger counting or less in 23 (56%) eyes and to less than 6/15 in 9 (22%) eyes. In five (12.2%) eyes vision was greater than 6/15, and in four (9.8%) eyes the status of vision was unknown. In addition to the usual signs of toxoplasmosis, signs of strabismus and nystagmus were evident in the cases reviewed. Thus, ocular toxoplasmosis should be suspected in patients, particularly children, with those clinical signs.

## INTRODUCTION

*Toxoplasma gondii* is a common parasite of animals and man throughout Indonesia; toxoplasmosis is a worldwide parasitic zoonosis. Srisasi (1990) reported a high precentage of *Toxoplasma* antibody in Obano, Irian Jaya (34.6%). Sandjaya (1985) reported *Toxoplasma* antibody prevalences of 26.6% and 36.6% from other parts of Irian Jaya. Maroef (1990) in his review of toxoplasmosis in Indonesia reported the following prevalences of *Toxoplasma* antibodies: South Kalimantan (31%), Jakarta (18%), Palu (16.6%), Surabaya (9%) and North Sumatra (9%).

This paper reviews the visual impairment and blindness caused by ocular toxoplasmosis in 28 children admitted between 1985-1989 to the Department of Ophthalmology, Ciptomangunkusumo Hospital. Nystagmus and strabismus as secondary complications were also evaluated.

## MATERIALS AND METHODS

There were 41 children, ranging in age from 6 months to 12 years, who presented with ocular lesions consistent with ocular toxoplasmosis. Diagnosis of ocular toxoplasmosis was based on characteristic clinical symptoms and a positive serological test. The test employed from 1985-1987 was the indirect hemagglutination (IHA) test, and from 1988-1989 an ELISA technique was used. Only 28 patients (total of 41 eyes) with ocular lesions had positive serology tests. Of these serolgically confirmed cases, 12 (42.8%) were males and 16 (57.2%) were females. Fifteen of the children (54%) were between 6-10 years of age, 7 (25%) were older and 6 (21%) were younger.

## RESULTS

Among the 28 children, 14 (50%) showed bilateral involvement, while 9 (32%) had unilateral involvement affecting the right eye and 5 (18%) had unilateral involvement affecting the left eye.

Visual acuity on first examination in the 41 eyes evaluated ranged between no light preception (LP) to better than 6/15: There was no light perception in one (2.4%) eye with unilateral involvement, 7 (17%) eyes had vision less than 1 m finger counting (FC), 15 (36.6%) had vision to 6 m FC, 9 (22%) had vision better than 6 m FC and less than 6/15, while 5 (12.2%) had vision better than 6/15. All of the eyes showed macular and paramacular eye lesions. In two patients with bilateral involvement, visual acuity could not be measured. Other clinical symptoms, observed in half of the patients, were strabismus in 9 (32%) cases strabismus and nystagmus in 4 (14%), and nystagmus in 1 (4%).

## DISCUSSION

The retina can harbor dormant congenital toxoplasmosis without any ophthalmoscopic evidence. Approximately 75% of congenitally infected newborns are asymptomatic. Puspone-groro (1990) in his study of 29 newborns with congenital toxoplasmosis found 0.17% with chorioretinitis. Lying dormant in the nerve fiber layer without provoking an inflammatory reaction, toxoplasmosis can cause what appears to be a primary infection many years after birth. Sabates *et al* (1981) and Perkins (1973) suggest that almost all cases of ocular toxoplasmosis may be the result of reactivation of congenital toxo-plasmosis.

Wilson *et al* (1980) in a study of 24 children found that 85% of children prospectively diagnosed with congenital toxoplasmosis and all children with no symptoms at birth or whose mothers had no history of acute infection of toxoplasmosis during pregnancy developed retinochoroiditis.

Ocular toxoplasmosis is especially evident in teen-aged females (Schlaegel, 1981); 57% of the children in this study were girls. New cases are less likely to develop in persons over the age of 40 years. Frenkel and Jacobs (1958) and Hogan *et al* (1964) found most of their cases in the 0-9 years age group and many in the 10-19 years age group. Fifteen (54%) of the cases in this study were 6-10 years of age.

Bilateral ocular toxoplasmosis occurs in 85% of cases according to Schlaegel (1981); Hogan *et al* (1964) reported bilateral ocular toxoplasmosis in 30% of their cases. In this study bilateral involvement occurred in 50% of the cases.

*Toxoplasma gondii* is an obligate intracellular protozoa parasite. It moves easily in tissue and enters into and multiplies in any nucleate cell. It is probably transmitted within circulating leucocytes to the eye, where it has a predilection for the nerve fiber layer. Perhaps because the fetal macular choroid has an endarterial circulation, the posterior pole is more affected than the retinal periphery. Severe visual loss and permanent blindness is due to macular lesions, papillomacular bundle lesions, and paramacular lesions with vitritis or pipillitis.

Friedimann and Knox (Schlaegel, 1981) and Quinlan (1990) reported that 41% of 63 patients with toxoplasmosis retinochoroiditis suffered permanent unilateral visual loss of 20/100 or less. In 88% of the cases with this severe visual loss was associated with the duration of the active episode and due to a lesion in the macular region. Mild to moderate visual loss (20/40-20/70) was seen in 16% of cases. Visual impairment occurred in 56.7% of the cases in this study and blindness in 20.1% of the cases when they were first diagnosed. All the eyes had macular and paramacular eye lesions. If the acute retinitis stage is not diagnosed promptly, an inactive scar, which usually develops in the macular, can cause strabismus from poor central vision and extra foveal fixation. If fixation is poor, nystagmus will be evident. Strabismus and nystagmus were observed in 50% of the cases in this study. When children have a mild infection, ocular toxoplasmosis may not become apparent until later in life when the retinochoroidal scarring is detected on ophthalmoscopic examination for symptoms associated with strabismus observed by parents or teachers.

## CONCLUSION

Ocular toxoplasmosis occurred mostly in girls (57.2%) in the 6-10 year age group. Bilaterality occurred in 50% of the patients. Visual impair-ment had occurred in 56% of the affected eyes and blindness in 19.4% when they were first seen. Strabismus and nystagmus occurred in 50% of the cases. Since ocular toxoplasmosis appears to be a reactivation of congenital infection, the key to managing ocular toxoplasmosis is to diagnose either the primary disease or its reac-tivation early, and to treat the disease aggressivly before retinal damage occurs causing severe visual impairment and blindness (Tabbara, 1988).

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