

ADULT OCULAR MANIFESTATION OF CONGENITAL TOXOPLASMOSIS

By A. Lim Siew Ming, A.M. (Singapore), F.R.C.S. (England), D.O. (London)

The toxoplasma is a highly organised protozoa parasite first described about 60 years ago. In 1939 Wolf, Corvan and Paige showed that it can cause human disease. It soon became established that 90% of congenital toxoplasmic cases had chorio-retinitis or other ocular abnormality. Sabin (1942) described a tetrad of chorio-retinitis, intracerebral calcification, internal hydrocephalus and fits or other signs of involvement of the central nervous symptoms. In many cases of congenital toxoplasmosis, the disease remained quiescent and is only accidentally diagnosed when the child or young adult discovers that one or both the eyes have defective vision. Sometimes, these lesions may remain quiescent throughout life: not infrequently, they become active presenting with posterior uveitis.

The following is a description of 3 cases of congenital toxoplasmosis presenting in adult life.

Case 1

This patient, Y.B.S., age 41, male, Indonesian was referred by a general practitioner on the 3rd March 1966, with a history of blurring of vision in his left eye since January 1966. He was seen by several doctors and was given eye-drops.

On examination, it was found that the vision of his left eye had diminished to 6/18 partly and that he had keratic precipitates on the cornea, with dense floaters and cells in the vitreous which occluded the view of the fundus. He was diagnosed to have severe left panuveitis and was admitted to the Mount Alvernia for treatment.

His right eye had normal vision with glasses (+0.75D cylinder at 180 degrees). His right fundus showed a patch of well-circumscribed pigmented non-active choroiditis about half the size of the disc, situated just below the macular (Fig. 1). The vitreous was clear.

Blood test of toxoplasmin haemagglutination gave a positive titre of 1/3,200.

This patient was diagnosed to have toxoplasmosis presenting with bilateral chorio-retinitis which was inactive in the right eye but was active in the left eye. He was treated with oral sulphadiazine and pyrimethamine.

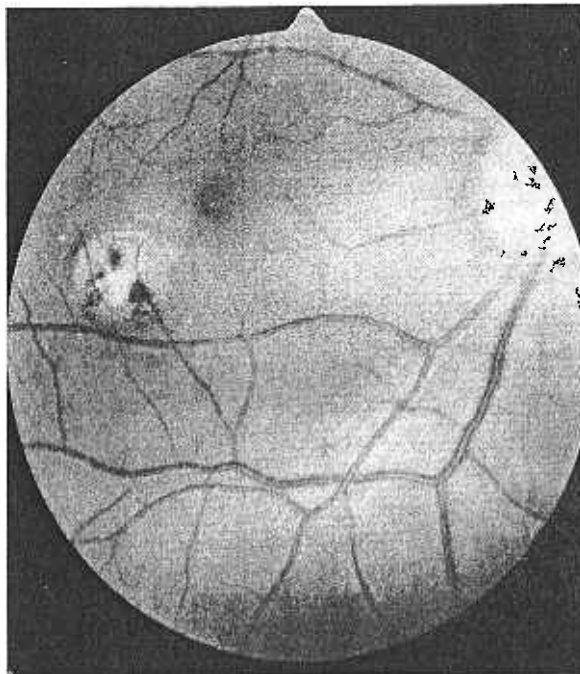


Fig. 1. Case 1. Right fundus show a well circumscribed pigmented lesion about half the size of the optic disc situated just infero-temporal to the macular. This lesion is due to an old inactive paramacula chorio-retinitis typically caused by toxoplasmosis. Toxoplasmin haemagglutination test positive 1/3,200.

Other investigations included

i) X-ray report:

Skull: There is no evidence of any bone lesion. The sella is within normal limits, and there is no evidence of raised intra-cranial pressure or of abnormal calcification.

Sinuses: All the necessary nasal sinuses are clear.

ii) blood tests for haemoglobin, red cells, white cells, and platelets were normal.

He improved with treatment, and the floaters and cells in the vitreous gradually decreased.

On 15th March the visual acuity of his left eye was 6/9 partly. A week later, on the 21st March 1966, the vision was 6/6 partly.

Case 2

This patient, W.J.S., Chinese, age 24, male, was referred by a general practitioner in Singapore on 24th March 1966, with a history that he

had seen several specialists in Malaysia for defective visual acuity since childhood. In the last 4 years there was further deterioration of his vision and he developed progressive difficulty in reading the newspapers. There was no past history or family history of significance.

On examination, it was found that his visual acuity for distance was 6/60 in both eyes. His vision could not be improved with glasses. He had an alternating divergent squint of 20 degrees. His ocular movements were otherwise normal except that he had no convergence. It was found, that both his macula were affected with dense pigmented scars. His right macula (Fig. 2)

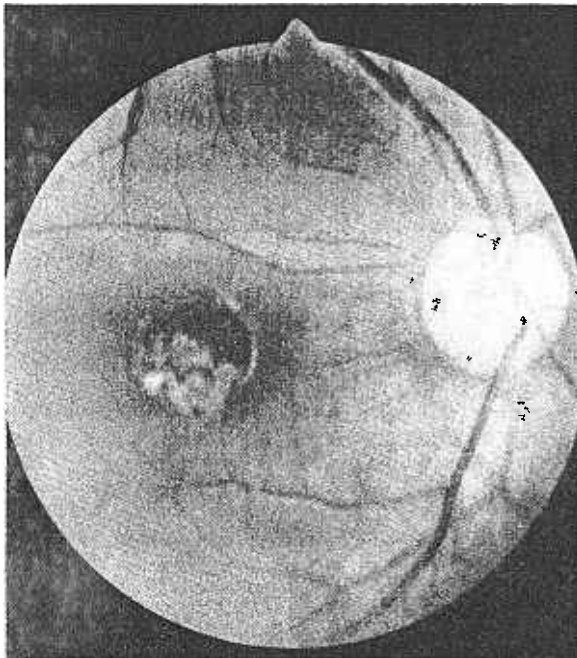


Fig. 2. Case 2. Right fundus: Dense well circumscribed pigmented punched out area of old chorio-retinitis almost the size of the disc at the macula. Loss of central vision with positive toxoplasmin haemagglutination test, 1/800.

showed a punched-out, well-circumscribed pigmented round area of old choroiditis almost the size of the disc. There was no other abnormality found in the right fundus. His left macula (Fig. 3) showed a well-circumscribed pigmented lesion with a slightly raised area of old choroiditis of fibrous tissue just larger than the size of the disc. Adjacent and supero-temporal to the main lesion were two small satellite lesions.

A toxoplasmin haemagglutination test was done on the 26th March 1966, was positive with a titre of 1/800.

His vision was improved with visual aids and this enabled him to read the newspaper. He was entirely satisfied with the improvement.

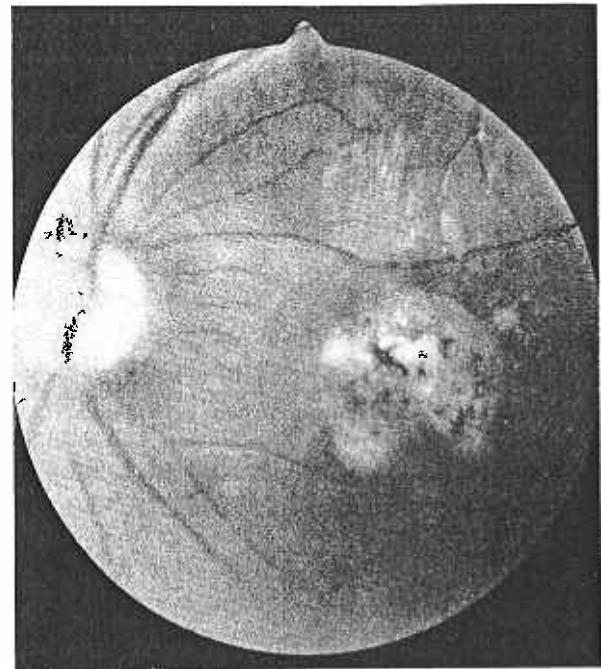


Fig. 3. Case 2. Left fundus: Dense well circumscribed pigmented slightly raised area of old chorio-retinitis just larger than the size of the disc at the macula. Adjacent and supero-temporal to this lesion are two small satellite lesions. Loss of central vision with positive toxoplasmin haemagglutination test, 1/800.

Case 3

This patient J.C.W., age 27, English, female, was referred by a general practitioner on 30th March 1966, with a history that her left eye had defective vision and progressive outward (divergent) squint which was first noted at the age of 3 years. She gave no other symptoms of significance. In May 1965, she had a lateral rectus recession on her left eye.

On examination, it was found that the right eye was quite normal with normal visual acuity.

She could only count fingers at 2 metres and had poor fixation of her left eye which also had a manifest divergent squint of 18 degrees. It was highly myopic and fundal examination showed that besides the myopic degenerative changes, she had old circumpapillary pigmented choroiditis with ectasia especially temporally (Fig. 4).

Her blood toxoplasmin haemagglutination test done on 11th May 1966, gave a positive titre of 1/1,600.

On 17th May, a 5 mm left medial rectus recession was done. The cosmetic result was good and she was left with a post-operative divergence of 4 degrees. However, her double vision which she first noticed after the operation in 1965, was again occasionally present with a false image popping in and out of her field of vision.

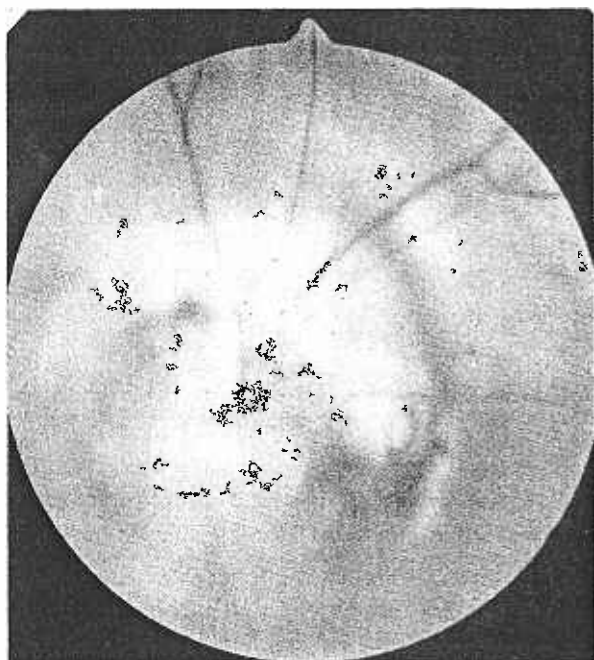


Fig. 4. Case 3. Left eye presented with poor vision and a secondary divergent squint. Examination showed a punched out non-active circumpapillary choroiditis with pigmentation. Toxoplasmin haemagglutination test was positive 1/1600.

In view of the grossly defective vision of her left eye, it was not possible for her to get any

degree of comfortable binocular vision so no further treatment was given. She was assured that to overcome slight diplopia of her left eye, she should concentrate on the vision on her right eye and try to disregard her vision on her left eye. It was also decided that as the lesion in her left eye was inactive no treatment for the toxoplasmosis was advocated.

Professor Perkins of London confirmed that the lesion of her left eye seemed likely a case of congenital toxoplasmosis followed by a weakening of the sclera in the region of the optic nerve with subsequent estasia and myopia.

COMMENTS

One of the most exciting observations in ophthalmology was that toxoplasmosis caused uveitis in 15% of all cases and accounted for more than 50% of posterior uveitis. This has great significance because the cause of uveitis, whether anterior or posterior, had so far been mainly non-specific.

The knowledge that a specific organism is responsible enables us to attack the disease more positively.

TABLE I
A SUMMARY OF THE MAIN FEATURES
OF THE 3 CASES DESCRIBED

Case	Age & Sex	Presenting Symptom	Bilaterality and Activity	Toxoplasmin Haemagglutination Test	Treatment	Diagnosis
1	41 male	Defective vision left eye	Bilateral: Right inactive para-macula lesion. Left active, fundus obscured by vitreous floaters.	1/3,200	Pyrimethamine and sulphadiazine	Typical
2	24 male	Defective vision both eyes	Bilateral inactive macular lesions.	1/800	Nil.	Typical
3	27 female	Defective vision and divergent squint, left eye	Unilateral: inactive left circumpapillary lesion.	1/1,600	Nil. (surgery for squint).	Likely

CLINICAL FEATURES

Recent reports have shown that toxoplasmosis can be transmitted from the maternal circulation and the organism is widely disseminated throughout the body, especially affecting the nervous tissues and the choroid. The ocular lesion frequently remains unrecognised and is either discovered in the adult at routine examination or as a result of visual defect. Sometimes the apparently quiet lesion is reactivated and manifests as a case of posterior uveitis with dense vitreous floaters.

The choroiditis is typically focal often affecting the juxtapapillary and macula regions. The "coloboma of the macula" has been reported frequently in literature and it is likely that most of these cases were in fact healed toxoplasmic lesions at the maculae.

DIAGNOSIS

The acute disease in an infant presenting with chorioretinitis, intracerebral calcification, internal hydrocephalus, fits and other systemic manifestation is diagnosed without difficulty. However, the occurrence of the congenital lesion discovered in older children and adults is frequently a diagnostic problem. This is because the condition is widespread and a positive serological test is so common in a normal adult population that the tests by themselves do not justify a diagnosis. These serological tests must be supported by clinical findings.

In these 3 cases, there was a positive haemagglutination test for toxoplasma associated with clinical lesions.

Case 1: manifested as a case of defective vision due to acute choroiditis with dense vitreous floaters of his left eye. With the paramacula focal choroiditis of his right eye and a positive haemagglutination test, this is considered a typical case.

Case 2: presented with bilateral defective vision and this was found to be due to bilateral typical focal punched-out pigmented macular lesions. With the positive haemagglutination test, this is again considered a typical case.

Case 3: presented with a left divergent squint due to poor vision, which was in turn the result of an inactive peripapillary choroiditis and high myopia. With a positive toxoplasmin haemagglutination test it is likely that the lesion was the result of congenital toxoplasmosis.

THERAPY

Most antibiotics and drugs are not effective against toxoplasmosis. However, it has been found that sulphadimidine and pyrimethamine not only controlled acute infection but also prevented relapses of the condition. This treatment may be combined with oral systemic steroid especially if there is marked inflammation and vitreous opacities.

The discovery of a specific drug against toxoplasma is an important breakthrough in our management of uveitis which has hitherto been non-specific. This is especially important because toxoplasmosis is the etiological agent in posterior uveitis in half the cases.

However, the assessment of response to therapy is difficult and pyrimethamine is toxic. Repeated blood checks are necessary and as the cysts are not destroyed, recurrences can only be prevented with prolonged use of the drugs.

It is probably best to treat only the active lesions especially if these are near the macula. Quiet lesions with no signs of activity need only be carefully watched.

In case 1, treatment with sulphadiazine and pyrimethamine was given together with oral steroid therapy because of the active choroiditis. In cases 2 and 3, as the lesions were not active no treatment was advocated.

ACKNOWLEDGEMENT

The author wishes to thank Mr. Keith Lyle M.S., M.D., F.R.C.P., F.R.C.S. and Professor E. J. Perkins, M.D., Ph.D., F.R.C.S. of London for their invaluable advice, and Dr. A. Ewart, Dr. V. Zaman, and Dr. Mulkit Singh of the Department of Parasitology, University of Singapore for their sustained interest in the toxoplasmin haemagglutination tests.

REFERENCES

1. Hogan, M.J. (1951): "Ocular toxoplasmosis", New York, Columbia University Press.
2. Hogan, M.J. (1956): "Ocular toxoplasmosis", clinical and laboratory diagnosis; evaluation of immunologic tests; treatment. Archives of Ophthalmology, Chicago, 55, 333.
3. Hogan, M.J., Thygeson, P. and Kimura, S. (1952): "Ocular toxoplasmosis".—Transaction of American Academy of Ophthalmology and Otolaryngology, 56, 863.
4. Hudson, J.R. (1954a): "Toxoplasmic chorioretinitis in the adult"—British Journal of Ophthalmology, 38, 179.
5. Hudson, J.R. (1954b): "Clinical aspects of Toxoplasmosis"—Proceedings of the Royal Society of Medicine, 47, 484.

6. Jacobs, L., Fair, J.R. and Bickerton, J.H. (1954a): "Adult ocular toxoplasmosis"—Archives of Ophthalmology, Chicago, 51, 287.
 7. Jacobs, L. and Lunde, M.N. (1957): "A haemagglutination test for toxoplasmosis". Journal of Parasitology, 43, 308.
 8. Woods, A.C. (1956): "Endogenous uveitis"—London, Bailliere, Tindall and Cox.
 9. Perkins, E.S. (1961): "Uveitis and Toxoplasmosis"—J. & A. Churchill Ltd.
-