Primary tuberculosis of the retina

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SUMMARY A case of pseudoglioma diagnosed on histopathology to be retinal tuberculosis is presented with a general review of the literature on ocular tuberculosis. The case is peculiar in that retinal tuberculosis occurred without concomitant involvement of the choroid.

In recent years very few cases of ocular tuberculosis have been reported.¹⁻⁸ They are limited to those illustrative cases where the diagnosis was unsuspected.^{9,10} Tuberculous lesions in the eye have been mostly described in patients with concomitant evidence of a tuberculous focus elsewhere.^{3-6,9} Primary tuberculous lesions in the eye have been rarely described in the orbit,^{6,7} conjunctiva,^{8,11} and retina.^{12,13}

We describe here an interesting case of a child with histologically proved retinal tuberculosis but no evidence of any demonstrable tuberculous focus in the choroid.

Case report

A 3½-year-old male child was noted to have had for two months a yellowish pupillary reflex and loss of vision in the right eye (Fig. 1). There had been no redness of the affected eye. On examination the anterior segment was normal. There was no enlargement of the cornea or the eyeball. In the vitreous a yellowish mass originating from the retina was seen. The mass was moderately vascularised, and multiple haemorrhages were seen on its surface. No areas of calcification were seen on ophthalmoscopy. The mass occupied the whole retina. On trans-illumination the mass was opaque. The intraocular pressure under ether-nitrous oxide anaesthesia was 8.5 mmHg Schiøtz. The visual acuity in the left eye was 6/6 and clinically normal.

The child had no systemic abnormality. No significant lymphadenopathy was seen.

There was no similar history in the family. No history of consanguinity was available. The father and grandfather had tuberculosis before their death.

The right eye was enucleated.

The haemoglobin was 14.4 g/dl. A total leucocyte count gave $18.2 \times 10^9/l$, lymphocytes 42%, neutrophils 56%, eosinophils 2%. The erythrocyte sedimentation rate was 16 mm in the first hour.

X-ray of chest showed a healed focus of tuberculosis at the apex of both lungs. X-ray of the orbits was normal, with no calcification. X-ray of the optic foramina and superior orbital fissure was normal. Serological test for syphilis (VDRL) was negative. Tuberculin skin test was positive.

HISTOPATHOLOGY

On gross examination a firm mass was seen involving the retina, which was detached. The surface was vascularised and a few haemorrhages were seen. The optic nerve stump was of normal thickness and consistency.

Microscopic examination showed inflammatory granulomas in the retina with pale staining centres of caseous necrosis surrounded by epithelioid cells and lymphocytes (Fig. 2). Occasional giant cells were also seen. Acid-fast bacilli could not be demonstrated. Few blood vessels were seen. The iris, ciliary body,

Fig. 1 Yellowish white pupillary reflex in right eye.

Fig. 2A: Retinal granulomatous (arrowed). ($\times 50$).
 B: Granuloma consisting of central necrosis, epithelioid cells, lymphocytes, and giant cells (arrowed). ($\times 127$).
 C: Granuloma consisting of caseous necrosis, epithelioid cells, lymphocytes. ($\times 127$). (All haematoxylin and eosin).

and choroid did not show any granuloma. No evidence of inflammation was seen in the sclera and optic nerve stump.

Discussion

Among the causes of leucocoria intraocular tuberculous inflammation is considered to be uncommon.¹⁴ The criteria for diagnosing ocular tuberculosis include the presence of tubercles composed of epithelioid cells and giant cells, caseation necrosis, rarely the presence of acid-fast bacilli, and evidence of systemic

tuberculosis.^{15,16} Failure to demonstrate acid-fast bacilli is not considered to be an evidence against a tuberculous aetiology by many authors.^{14,17}

In our patient pseudoglioma was considered in view of low intraocular tension and absence of calcification radiologically in the affected eye. On histopathology typical discrete tubercles with central caseous necrosis surrounded by epithelioid cells, lymphocytes, and occasional giant cells were seen in the retina. The choroid, iris, ciliary body, and the region of the optic nerve head showed no such inflammation. Though no acid-fast bacilli could be demonstrated, we consider that the histopathological findings are quite characteristic of tuberculosis.

Radiological evidence of a healed pulmonary tuberculous lesion, a positive tuberculin test, and a family history of tuberculosis are other corroborative features in our case. Granulomatous retinal inflammation is also described in syphilis in which a positive serology and systemic features are diagnostic. In sarcoidosis, in which involvement is usually bilateral, the lesions are chorioretinal, anterior uveitis is more common, and radiological evidence of perihilar adenopathy and skeletal changes is diagnostic. Parasitic infestations causing granulomas are described in toxoplasmosis, toxocariasis, and certain other nematode infestations. Granulomatous inflammation in parasitic infestations always show eosinophils and plasma cells in addition to lymphocytes on histopathological examination. Also direct evidence of the presence of parasites in the inflamed tissue can be obtained on histopathological examination.

Tuberculosis of the retina is uncommon in contrast to that of the choroid¹⁸ and occurs more often in acute general miliary tuberculosis or by extension from other parts of the eye. Primary retinal tuberculosis has been rarely described before.^{12,13} Ocular tuberculosis has been described with a concomitant tuberculous focus in lungs,^{6,9,10} long bones,³ and spine.⁴ The diagnosis of extrapulmonary tuberculosis, especially ocular tuberculosis, is riddled with difficulties due to lack of inadequate investigating facilities⁴ and the relative rarity of acid-fast bacilli in the lesions.¹⁷ Because of the difficulties in clinching a specific diagnosis most eyes with pseudoglioma due to intraocular tuberculosis have been enucleated under a mistaken diagnosis of retinoblastoma.^{9,10,13} Ocular lesions in tuberculosis are mostly due to haematogenous spread from a systemic focus, including lymph nodes. We believe that in our patient retinal granulomatous inflammation occurred secondarily to a systemic tuberculous focus, possibly in lymph nodes. We suggest that retinal tuberculosis should be suspected in all eyes with pseudoglioma, particularly in the developing countries, where tuberculosis is still rampant.

References

- 1 Chou Ni, Papak JJ, Robinson NL, Ben Fu Wu. Uveal tuberculosis. *Int Ophthalmol Clin* 1982; **22**: 103–24.
- 2 Darrel RW. Acute tuberculous panophthalmitis. *Arch Ophthalmol* 1967; **78**: 51–4.
- 3 Oakhill A, Shah KJ, Thompson AG, Stokes MJ, Mann JR. Orbital tuberculosis in childhood. *Br J Ophthalmol* 1982; **66**: 396–7.
- 4 Maria DL, Mundada SH. Sub-periosteal tuberculoma of left wall or orbit. *Ind J Ophthalmol* 1981; **29**: 47–9.
- 5 McMoli TE, Mordi VPH, Grange A, Abiose A. Tuberculous panophthalmitis. *J Pediatr Ophthalmol Strabismus* 1978; **15**: 383–6.
- 6 Sen DK. Tuberculosis of orbit and lacrimal gland. *J Pediatr Ophthalmol Strabismus* 1980; **17**: 232–8.
- 7 Agarwal PK, Nath J, Jain BS. Orbital involvement in tuberculosis. *Ind J Ophthalmol* 1977; **25**: 12–6.
- 8 Charles V, Charles SX. Primary tuberculosis of conjunctiva. *J Ind Med Assoc* 1980; **16**: 74–5.
- 9 Wade A. Case of chorio-retinal tuberculosis resembling a retinoblastoma. *Daker Med* 1979; **34**: 322–4.
- 10 Knapp A. Intraocular tuberculosis. *Arch Ophthalmol* 1903; **32**: 22–6.
- 11 Eyre JWH. Conjunctival tuberculosis. *Lancet* 1912; **i**: 1320–1.
- 12 Knapp A. On some forms of retinal tuberculosis. *Trans Am Ophthalmol Soc* 1913; **13**: 486–91.
- 13 Velter E, Blum J. Sur un cas de tuberculose oculaire au point de depart retinien. *Arch Ophthalmol (Paris)* 1926; **43**: 141–3.
- 14 Duke-Elder S. Diseases of the uveal tract. *System of ophthalmology*. London: Kimpton, 1965; **9**: 274–8.
- 15 Woods AL. *Endogenous inflammation of uveal tract*. Baltimore: Williams and Wilkins, 1961: 51–3.
- 16 Krishnan M, Mehta DK, Sandhu PS. *Proc Ann Conf All India Ophthalmol Soc, Manipal*. 1980; 403–4.
- 17 Sorsby A. *Modern ophthalmology: systemic aspects*. London: Butterworths, 1963: 133–4.
- 18 Elwyn H. *Diseases of retina*. Philadelphia: Blackistan, 1946: 361–88.

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