CASE REPORT

Tubercular retinal vasculitis

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SUMMARY

Intraocular tuberculosis (TB) infection can have different clinical manifestations including retinal vasculitis. It more frequently involves the veins and is associated with retina haemorrhages and neovascularisation. The diagnosis may be difficult and presumptive being based on clinical findings and evidence of systemic TB infection. The authors present a case of a 61-year-old woman with blurred vision and floaters in her left eye for 6 years, associated with recurrent vitreous haemorrhages. A temporal branch retinal vein occlusion was presumed. Four years later her right eye was also involved. Her best-corrected visual acuity (BCVA) was 20/50 in both eyes. Fundoscopic examination showed bilateral venous occlusion with vascular staining on fluorescein angiography suggestive of vasculitis secondary to Eales Disease (ED). The interferon gamma release assay (IGRA-QuantIFERON-TB Gold) was positive and antituberculosis treatment (ATT) was started. Her final BCVA was 20/20 bilaterally, without recurrences over a follow-up of 15 months. The use of ATT is likely to reduce recurrent vitreous haemorrhages and eliminate future recurrences.

BACKGROUND

The eye is one of the extrapulmonary sites of tuberculosis (TB) infection. Different clinical manifestations include anterior uveitis, serpiginous-like choroiditis, neuroretinitis, choroidal granuloma and retinal vasculitis.

It represents a challenging diagnosis since 60% of patients with extrapulmonary TB have no evidence of pulmonary infection.¹ The diagnosis remains presumptive and it is based on clinical findings and evidence of pulmonary involvement or positive tuberculin skin test and/or interferon gamma release assay (IGRA)-QuantIFERON-TB Gold consistent with latent infection. Polymerase

chain analysis of intraocular fluids or tissue biopsies may be performed, but are invasive tests.²⁻⁶

Tubercular retinal vasculitis more frequently involves the veins and is characterised by vitreous infiltrates (vitritis), retinal haemorrhages and neovascularisation.^{7 8}

The treatment includes oral corticosteroids, anti-tuberculosis treatment (ATT), laser photocoagulation and pars plana vitrectomy for persistent vitreous haemorrhage.⁹

It is still unknown whether the vasculitis per se is infective or if it represents a hypersensitivity response to *Mycobacterium tuberculosis* (immune-mediated hypersensitivity response manifesting clinically as vasculitis).

Tuberculous retinal vasculitis shares with Eales disease extensive peripheral capillary non-perfusion and periphlebitis, although by definition Eales disease is characterised by recurrent vitreous haemorrhages in young adults.¹⁰⁻¹⁷

CASE PRESENTATION

A 61-year-old woman, without any relevant medical history except for arterial hypertension (AHT), presented with blurred vision and floaters in her left eye for 6 years, associated with recurrent vitreous haemorrhages. A temporal branch retinal vein occlusion was presumed and she was submitted to laser treatment. Four years later her right eye was also involved and laser treatment was also performed as well as two intravitreal injections of anti-vascular endothelial growth factor (VEGF) Bevacizumab (Avastin). Her best-corrected visual acuity was 20/50 in both eyes. Slit-lamp biomicroscopy of both eyes revealed no anterior segment inflammation. Fundoscopic examination showed intraretinal haemorrhages and vitreous haemorrhage on the right eye and vitreous haemorrhage, vascular sheathing, neovascularisation and capillary

Figure 1 Ocular fundus of the right eye with intraretinal haemorrhages and of the left eye showing vascular sheathing, neovascularisation and capillary non-perfusion.

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Figure 2 Fluorescein angiography showing capillary non-perfusion, vascular sheathing and neovascularisation with late leakage and chorioretinal scars secondary to the laser treatment.

non-perfusion on the left eye, suggestive of retinal vasculitis (figure 1). Fluorescein angiography showed late leakage corresponding to neovascularisation and chorioretinal scars secondary to the laser treatment (figure 2). The IGRA-Quantiferon-TB Gold was positive and the patient was started on ATT with Rifater (rifampin, isoniazid and pyrazinamide) and pyridoxine supplementation. After 2 months of treatment with Rifater, the patient maintained treatment with isoniazid and rifampin for an additional period of 7 months. Methylprednisolone (64 mg/day) was initiated after 2 weeks of ATT but was suspended due to poor AHT control. Sectorial laser treatment was performed on both eyes. Her final visual acuity was 20/20 in both eyes with no recurrences over a follow-up of 15 months (figure 3).

INVESTIGATIONS

Fluorescein angiography showed capillary non-perfusion, vascular sheathing and neovascularisation with late leakage (figure 2).

Laboratory studies including blood glucose, complete blood count, sickle cell preparation and serum protein electrophoresis, ACE and lysozyme, antinuclear antibodies, rheumatoid factor, erythrocyte sedimentation rate, perinuclear and cytoplasmic antineutrophil cytoplasmic antibodies, lupus anticoagulant, anticardiolipin antibodies, anti- β -2 glycoprotein 1 antibodies and urinalysis were negative.

The chest x-ray did not show pulmonary involvement and sputum cultures were negative for *M. tuberculosis*.

The IGRA-Quantiferon-TB Gold was positive.

DIFFERENTIAL DIAGNOSIS

- ▶ Branch retinal vein occlusion
- ▶ Proliferative diabetic retinopathy
- ▶ Eales disease
- ▶ Haemoglobinopathy retinopathy
- ▶ Sarcoidosis
- ▶ Idiopathic retinal vasculitis

Figure 3 Ocular fundus after antituberculosis treatment without vitreous haemorrhage.

TREATMENT

The patient was treated with ATT for a total period of 9 months (since prolonged ATT therapy is recommended in patients with extrapulmonary TB) showing a significant improvement in visual acuity without any recurrences.

The concomitant use of systemic corticosteroids is highly beneficial in patients with evidence of latent TB infection as it helps limiting the damage to the ocular tissues (caused from delayed type hypersensitivity) while ATT reduces the number of recurrences.¹¹ In this case corticotherapy was suspended due to poor AHT control.

OUTCOME AND FOLLOW-UP

There were no recurrences over a follow-up of 15 months after initiating therapy.

DISCUSSION

Intraocular TB infection and other forms of extrapulmonary TB may occur in the absence of histological and radiological evidence of pulmonary involvement.

The tuberculin skin test and the IGRA-Quantiferon-TB Gold are useful screening tests for latent TB especially in selected patients with clinical findings characteristic of intraocular TB and no symptoms or signs suggestive of other origin.

There are no recommendations for starting ATT in uveitis patients with latent TB, but it is possible that some forms of TB-related uveitis like retinal vasculitis and ED are related to a hypersensitivity reaction to tubercular antigens. It is thought that the use of ATT in these patients is likely to reduce active inflammation and eliminate future recurrences.

In this case, there is neovascularisation, capillary non-perfusion, vascular sheathing and vitreous haemorrhage, suggestive of TB retinal vasculitis with a positive IGRA-Quantiferon-TB Gold. The patient was started on ATT with obvious clinical recovery and no recurrences over a period of 15 months.

Learning points

- ▶ The interferon gamma release assay-QuantiFERON-TB Gold is a useful screening test in selected patients with clinical findings characteristic of retinal vasculitis.
- ▶ Antituberculosis treatment is likely to reduce active inflammation and eliminate future recurrences in patients with evidence of ocular tuberculosis and retinal vasculitis.
- ▶ Extrapulmonary TB may be present with no previous history or evidence of pulmonary infection.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Alvarez S, McCabe WR. Extrapulmonary tuberculosis revisited: a review of experience at Boston City and other hospitals. *Medicine (Baltimore)* 1984;63:25–55.
- 2 Kotake S, Kimura K, Yoshikawa K, et al. Polymerase chain reaction for the detection of Mycobacterium tuberculosis in ocular tuberculosis. *Am J Ophthalmol* 1994;117:805–6.
- 3 Gupta V, Arora S, Gupta A, et al. Management of presumed intraocular tuberculosis: possible role of the polymerase chain reaction. *Acta Ophthalmol Scand* 1998;76:679–8.
- 4 Bowyer JD, Gormley PD, Seth R, et al. Choroidal tuberculosis diagnosed by polymerase chain reaction. A clinicopathologic case report. *Ophthalmology* 1999;106:290–4.
- 5 Barondes MJ, Sponsel WE, Stevens TS, et al. Tuberculous choroiditis diagnosed by chorioretinal endobiopsy. *Am J Ophthalmol* 1991;112:460–1.
- 6 Rao NA, Saraswathy S, Smith RE. Tuberculous uveitis: distribution of Mycobacterium tuberculosis in the retinal pigment epithelium. *Arch Ophthalmol* 2006;124:1777–9.
- 7 Gupta A, Gupta V, Arora S, et al. PCR-positive tubercular retinal vasculitis: clinical characteristics and management. *Retina* 2001;21:435–44.
- 8 Gupta V, Gupta A, Rao NA. Intraocular tuberculosis—an update. *Surv Ophthalmol* 2007;52:561–87.
- 9 Bansal R, Gupta A, Gupta V, et al. Role of anti-tubercular therapy in uveitis with latent/manifest tuberculosis. *Am J Ophthalmol* 2008;146:772–9.
- 10 Eales H. Retinal Hemorrhages associated with epistaxis and constipation. *Birmingham Med Rev* 1880;9:267.
- 11 Eales H. Primary retinal hemorrhage in young men. *Ophthalmic Rev* 1882;1:41.
- 12 Biswas J, Sharma T, Gopal L, et al. Eales Disease an update. *Surv Ophthalmol* 2002;47:197–214.
- 13 Elliot A. Recurrent intraocular hemorrhage in young adults (Eales' disease). *AMA Arch Ophthalmol* 1959;61:745–54.
- 14 Niazi MK, Ikem IA. Mycobacterium tuberculosis as a causative agent in Eales' disease; PCR based analysis of vitreous samples. *IDJ of PAK* 2010;19:164–6.
- 15 Biswas J, Therese L, Madhavan HN. Use of polymerase chain reaction in detection of Mycobacterium tuberculosis complex DNA from vitreous sample of Eales' disease. *Br J Ophthalmol* 1999;83:994.
- 16 Singh R, Toor P, Parchand S, et al. Quantitative polymerase chain reaction for Mycobacterium tuberculosis in so-called Eales' disease. *Ocul Immunol Inflamm* 2012;20:153–7.
- 17 Das T. Eales' disease: diagnosis and management. *Eye* 2010;24:472–82.

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