

CASE REPORT

Bilateral Retinal Vasculitis: A Presumed Case of Ocular TB without Inflammation

UMI KALTHUM MN, NORFARIZAL A, RONA ASNIDA N, AYESHA MZ, JEMAIMA CH

Department of Ophthalmology, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latif, Bandar Tun Razak, Cheras, 56000, Kuala Lumpur, Malaysia.

ABSTRAK

Seorang pelajar berusia 17 tahun berketurunan Indonesia mengadu kehilangan penglihatan di kedua-dua belah mata selama dua minggu. Tiada kontak dengan pesakit tuberculosis (TB) dilaporkan dan ibu-bapanya menyatakan pesakit mendapat imunisasi lengkap termasuk BCG. Walaubagaimanapun, tiada kesan parut BCG kelihatan. Penglihatan pesakit adalah 6/36 dan 6/60 untuk mata kanan dan kiri. Ruang hadapan dan vitreous mata tiada radangan. Pemeriksaan funduskopi menyerlahkan vaskulitis retina, kebocoran saluran darah, vena tersumbat, saluran darah baru dan makula bengkak. Angiografi menggunakan fluorescein mengesahkan kawasan kapilari yang tidak mendapat perfusi. Ujian Mantoux adalah positif dan pesakit diberikan ubat anti-TB. Ujian HIV adalah negatif. Tiga hari kemudian, ubat antiradang diberikan. Pesakit juga menerima laser di kedua-dua belah matanya. Tiada terdapat radangan vitrius sepanjang pesakit menerima rawatan.

Kata kunci: kehilangan penglihatan, angiografi fluorescein, laser

ABSTRACT

A 17-year-old male student of Indonesian parentage presented with two weeks history of progressive painless bilateral visual deterioration. There was no contact with tuberculosis (TB)-infected patients and parents claimed that all immunization including BCG was completed. However, BCG scar was not apparent. Visual acuity was 6/36 and 6/60 in the right and left eyes respectively. The anterior and vitreous chambers were quiet. Funduscopic examination revealed retinal vasculitis with perivascular exudates, branch vein occlusion, neovascularization and macular oedema. Fluorescein angiography confirmed large areas of capillary non-perfusion and leaking new vessels. Mantoux test was positive and full regime anti-TB therapy was instituted. HIV screening was negative. Three days later, an immunosuppressive

Address for correspondence and reprint requests: Dr. Umi Kalthum Md Noh, Department of Ophthalmology, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latif, Bandar Tun Razak, Cheras, 56000, Kuala Lumpur. Tel: 603-91455981. Fax: 603-91456733. Email: umi_fizul@yahoo.com

dose of oral steroid was started. Both eyes received intensive laser photocoagulation. Interestingly, there was no development of vitritis throughout.

Keywords: blurring of vision, fluorescein angiography, laser

INTRODUCTION

Tuberculosis is on the rise due to influx of foreign workers into the country. Ocular tuberculosis can either be immunogenic or infective in origin, however, the definitive diagnosis is challenging (Nissapatorn et al. 2007). Broadly, the clinical features of ocular tuberculosis give certain clues towards the underlying aetiology, supplemented by other tests. We report an interesting case of seemingly infective ocular tuberculosis in an immunocompetent patient, yet without any signs of inflammation. This case highlights the ocular features, the importance of early management and the difficulties in diagnosing the underlying aetiology of ocular tuberculosis.

CASE REPORT

A 17-year-old male student of Indonesian parentage presented with two weeks history of painless and progressive visual deterioration without photopsia or floaters. He denied any contact with tuberculosis patients or any high-risk behavior. There was no reported back or joint pain, fever or rashes, nor any constitutional symptoms. According to his parents, all immunisation was up to date, including for Bacilli Calmette Guèrin (BCG).

Visual acuity at presentation was 6/36, N48 and 6/60, N-for the right and left eyes respectively. There was

no relative afferent pupillary defect, and both the anterior and vitreous chambers were quiet. On funduscopic examination, the right optic disc is swollen with macular star. There was vasculitis involving both arteries and veins with perivascular exudates and signs of branch vein occlusion bilaterally (Figure 1). In addition, occlusive vasculitis was seen on the left eye. Blotchy haemorrhages were seen with cotton wool spots and obvious macular oedema, as evidenced on optical coherence tomography (OCT) (Figure 1). There was no evidence of choroiditis.

Fluorescein angiography study confirmed large areas of capillary fallout in both eyes and leaking new vessels, consistent with ischaemia secondary to inflammation (Figure 2). Mantoux test was measured to be 15 mm and screening for Human Immunodeficiency Virus (HIV) was negative. Haematological parameters did not show any elevation of the white cell count or its differentials. Erythrocyte sedimentation rate showed increased level of 98 mmol/ hr. The VDRL test was negative and chest X-ray was clear. The patient's family declined to have quantiferon and polymerase chain reaction (PCR) tests done.

Based on the significant Mantoux test and elevated ESR level, he was diagnosed as ocular TB, although there was no sign of vitritis and anterior

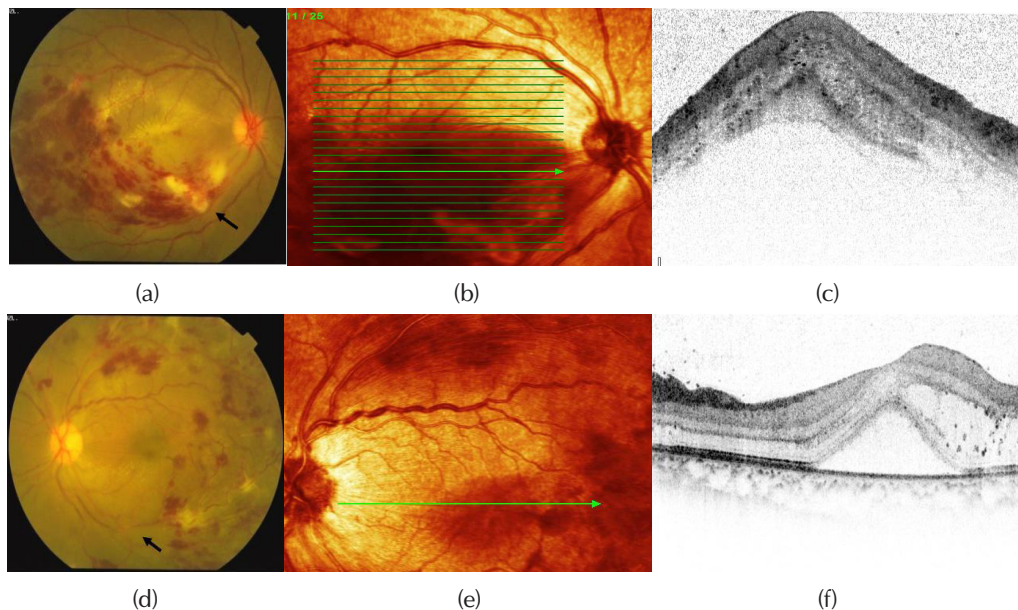


Figure 1: Photograph of the fundus of the right (a) and left (d) eyes showing severe vasculitis and macular oedema (arrow), with corresponding macular elevation on OCT macula (c and f). Photos (b) and (e) show the scan cut at which macula elevation is seen.

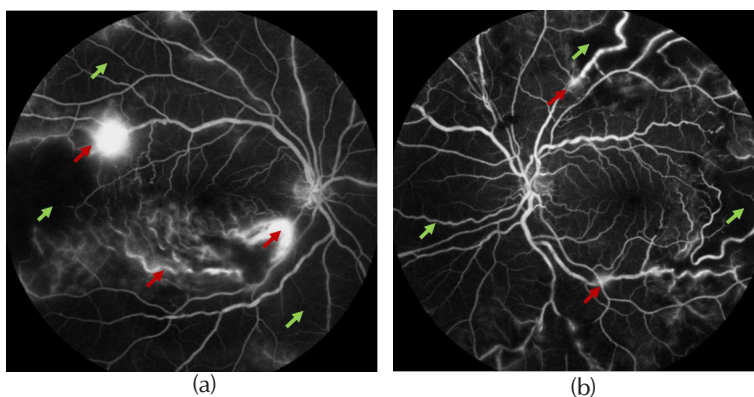


Figure 2: Photos a and b show fluorescein angiography findings which correspond with clinical pictures in Figure 1. Dark areas represent hypoperfusion (green arrow) and hyperfluorescent area show leakages from vasculitic vessels (red arrow)

chamber inflammation despite being immunocompetent. Full regime of anti-TB therapy was started constituting of rifampin 600 mg, ethambutol 800 mg, isoniazid 300 mg, and pyrazinamide 1000 mg once daily. His macula

showed reduction in thickness on follow-up. He also received intensive panretinal laser photocoagulation. Three days following the institution of anti TB, patient was started on 1mg/ kg of oral steroid daily. New vessels showed signs

of regression and macula oedema was resolving in both eyes. His visual acuity had improved to 6/12 and patient is currently still receiving treatment.

DISCUSSION

The incidence of tuberculosis is on the rise due to influx of foreign workers into the country and the increasing number of HIV positive patients (Dolin et al. 1994). Tuberculosis is a bacterial infection which does not only affect the lungs, but may also occur in any other organs, including the eye. Ocular tuberculosis may occur in isolation or as miliary infections from another source (Helm & Holland 1993). The ocular manifestations of TB may either be immunogenic or infective in origin (Helm & Holland 1993), however the definitive diagnosis between these two diagnoses may be challenging. The management of immunogenic ocular TB is different from the infective ones, hence the importance of correct diagnosis. Immunogenic TB requires treatment with immunomodulating agents such as steroid, whereas anti-TB medication is necessary for infective cases. However, the Jarisch-Herxheimer reactions may occur following initiation of anti-tuberculous therapy and may also require treatment with steroids (Neunhöffer et al. 2013).

Our patient presented with occlusive retinal vasculitis without other signs of ocular inflammation, despite his immunocompetent status. Generally, immune-mediated and infective ocular TB is differentiated by its clinical features (Kurup & Chan 2006), especially if laboratory results are indefinite.

Immunogenic TB tends to present with vascular occlusive features associated with dense vitritis in immunocompetent patients (Thompson & Albert 2005). Although infective ocular TB affecting the posterior segment usually manifests as multiple choroidal lesions, consistent with the haematologic spread of the bacteria (Sheu et al. 2001), no choroidal lesions were seen in this case. The QuantiFERON®-TB Gold In-Tube test (QFT-GIT) is a valuable diagnostic tool to diagnose infective TB (Rutherford et al. 2010). However, this may not always be possible for each case due to financial limitation. Furthermore, this particular test does not differentiate between active or latent TB (Rutherford et al. 2010).

Tuberculin-skin (Mantoux) test measures the hypersensitivity reaction to tuberculin (Nayak & Acharjya 2012). Although the test is neither 100% specific nor 100% sensitive, it is still widely used to screen against TB, especially in high risk populations. Combining both the Tuberculin-skin test and the gold Quantiferon assay may prove to yield better results in diagnosing TB (Rutherford et al. 2010). T-SPOT-TB is another available form of Interferon-Gamma Reactive Assays (IGRAs). It has been shown to have better sensitivity for diagnosing active TB compared to the conventional tuberculin skin test (Simsek et al. 2010). The management of ocular TB largely depends on the underlying aetiology. The mainstay of treatment and diagnosis for infective ocular TB (either latent or active) is anti-TB medications, with regular follow-up for monitoring its side effects. Prompt institution of

immunosuppressive agents is vision-saving in immune-mediated ocular TB (Gupta et al. 2001). However, this particular case is not a clear cut one, hence we opted to err on the safe side and started anti-TB medication, prior to starting the immunosuppressive agent. Clinical features of ocular TB which points towards infective nature are vasculitis, macula oedema, vitritis, choroiditis and anterior uveitis (Alvarez et al. 2009). However, in some cases the vasculitis and macular conditions cannot be ascertained. Ocular coherence tomography and fluorescein angiogram study provide invaluable additional information. Areas of capillary fallout and leaking new vessels are more apparent on angiogram study. Furthermore, macular ischaemia which may occur with or without macular oedema is important as it carries grave visual prognosis.

CONCLUSION

Ocular tuberculosis may affect individuals despite previous vaccination. The importance of differentiation between immune-mediated and infective TB lies in the management. Fluorescein angiography study and ocular coherence tomography are important diagnostic tools in these cases. High index of suspicion and prompt management is important to save vision, and possibly lives.

REFERENCES

- Alvarez, G.G., Roth, V.R., Hodge, W. Ocular tuberculosis: diagnostic and treatment challenges. *Int J Infect Dis*. 2009;13(4):432-435.
- Dolin, P.J., Ravigliione, M.C., Kochi, A. 1994. Global tuberculosis incidence and mortality during 1990-2000. *Bull World Health Organ* 72(2): 213-220.
- Gupta, A., Gupta, V., Arora, S., Dogra, M.R., Bamberg, P. 2001. PCR-positive tubercular retinal vasculitis: clinical characteristics and management. *Retina* 21(5): 435-444.
- Helm, C.J., Holland, G.N. 1993. Ocular tuberculosis. *Surv Ophthalmol* 38(3): 229-256.
- Kurup, S.K., Chan, C.C. 2006. Mycobacterium-related ocular inflammatory disease: diagnosis and management. *Ann Acad Med Singapore* 35(3): 203-209.
- Nayak, S., Acharjya, B. 2012. Mantoux test and its interpretation. *Indian Dermatol Online J* 3(1): 2-6.
- Neunhöffer, H., Gold, A., Hoerauf, H., Herbort, C., Heiligenhaus, A., Zimmermann, O., Feltgen, N. 2013. Isolated ocular Jarisch-Herxheimer reaction after initiating tuberculostatic therapy in a child. *Int Ophthalmol*, in press.
- Nissapatorn, V., Lim, Y.A.L., Jamaiah, I., Man Chin, H., Ilyana, M.Z., Nonaziah, M.Z., Siti Hasifah, A., Kuppusamy, I. Tuberculosis in Malaysia, a continuous surge. *Southeast Asian J Trop Med Public Health*. 2007; 38: 231-239
- Rutherford, M., Alisjahbana, B., Maharani, W., Sampurno, H., van Crevel, R., Hil, P.C. 2010. Sensitivity of the quantiferon-gold in-tube assay in sputum smear positive TB cases in Indonesia. *PLoS One* 5(8): e12020.
- Sheu, S.J., Shyu, J.S., Chen, L.M., Chen, Y.Y., Chirn, S.C., Wang, J.S. 2001. Ocular manifestations of tuberculosis. *Ophthalmology* 108(9): 1580-1585.
- Simsek, H., Alpar, S., Ucar, N., Aksu, F., Ceyhan, I., Gözalan, A., Cesur, S., Ertek, M. 2010. Comparison of tuberculin skin testing and T-SPOT.TB for diagnosis of latent and active tuberculosis. *Jpn J Infect Dis* 63(2): 99-102.
- Thompson, M.J., Albert, D.M. 2005. Ocular tuberculosis. *Arch Ophthalmol* 123(6): 844-849.