

Tuberculosis-related episcleritis: a case report

Rina Wulandari^a, Erdina Hana Jelita^b

^a rinawulandari0202@gmail.com

^{a,b} KMU Eye Clinic, Gresik, East Java, Indonesia

Abstract

Introduction: Tuberculosis (TB) is a leading cause of infectious disease in developing and highly endemic countries. Primarily affects the lungs, but also invariably involves ocular tissue. Association of TB and episcleritis is very rarely documented and not many cases have been reported worldwide. **Case Illustration:** A 39-year-old Indonesian female presented with unilateral mild pain and redness of right eye two weeks before admission. It was her fourth episode in one year. Previous classic episcleritis treatment partially ended her symptoms before reappeared. Rheumatoid disease and TB history were denied. There was nodular episcleritis in the inferior part of the right eye. Systemic investigation showed leukocyte and erythrocyte sedimentation rate (ESR) elevation, positive Mantoux test, with normal chest radiograph. Later symptoms and lesion resolved after anti tubercular therapy (ATT). **Discussion:** Episcleritis is mostly idiopathic, only one third of cases are found to be related with systemic condition. Association of tuberculosis with episcleritis is very rare, only a few cases have been reported worldwide. We encountered a case of tubercular episcleritis by the history of recurrent episode which not responding with regular medication, positive Mantoux test and Indonesia's TB endemic status. Additionally, improvement after ATT also confirmed the diagnosis. **Conclusion:** This case suggests that TB can cause episcleritis, especially in TB endemic countries. TB should be considered in facing recurrent episcleritis cases to avoid unnecessary complications.

Keywords: episcleritis, tuberculosis, ocular tuberculosis

Introduction

Episcleritis is a benign inflammatory condition of episcleral layer that is mostly idiopathic. Only 7-8% of episcleritis and scleritis are infectious caused and herpes zoster virus has been implicated as the most common cause in the United States [1]. It is different in other parts of the world, in developing countries, tuberculosis (TB) infection causes the highest mortality and morbidity. For high endemic countries, TB has been the most infectious cause of uveitis, but TB related - episcleritis is a very rare presentation, its association is rarely documented and only few cases are reported in the literature[2],[3].

Case Illustration

A 39-year-old-Indonesian female presented with unilateral mild pain redness of right eye two weeks before admission. It was her fourth episode in one year. Classic episcleritis treatment using steroids and nonsteroidal anti-inflammatory drug (NSAID) from another hospital partially ended her symptoms but always reappeared. She had no problem in her opposite eye, fever, cough, lethargy, joint pain, stiffness, and mouth dryness. She also denied any systemic disease of her and her family, including rheumatoid disease and TB.

Body mass index (BMI) of 22 with normal vital sign and had no palpable lymph node on the neck. On ophthalmological examination of right eye, the best corrected visual acuity (BCVA) was 6/6 with normal intraocular pressure. There was conjunctival and episcleral injection in the lower part of the right eye, with single focal elevated lesion and engorged vessel that blanch with phenylephrine test (fig.1). There was no abnormality in the iris, anterior chamber, vitreous and retina in right eye and the opposite one. She was sent to do laboratory investigation, chest radiograph and Mantoux test, since there was financial limitation to do interferon gamma release assay (IGRA) test.

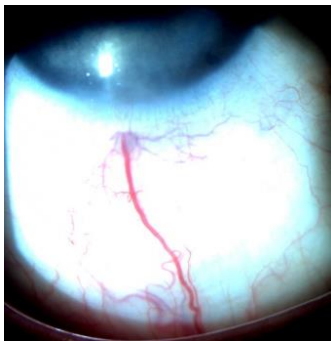


Fig 1. Conjunctival and episcleral injection with focal elevated lesion and engorged vessel

Leukocytes were 12,000/mcl and erythrocyte sedimentation rate (ESR) was 63mm/hour. Syphilis, rheumatoid arthritis factor and human immunodeficiency virus (HIV) were all negative. Chest radiograph was normal and no evidence of pulmonary TB (fig.2). Mantoux test was 17 mm x 22 mm after 72 hours injection (fig.3), which is highly suggestive for TB.



Fig 2. Normal chest radiograph



Fig 3. Positive Mantoux test

We diagnosed this patient with tubercular nodular episcleritis. She was advised to instill prednisolone acetate 1% eye drop four times daily with tapered dose plan and lubricant as supportive treatment, also consulted to the internal medicine for evaluation of other TB site and anti-tuberculosis treatment (ATT). Two weeks after receiving fixed-dose therapy category 1 of ATT, pain and eye redness reduced, later symptoms entirely subsided, and lesion healed after one month of ATT (fig.4). She was prescribed with artificial tears, advised to continue her ATT as directed in TB eradication program, and to do monthly regular follow up.

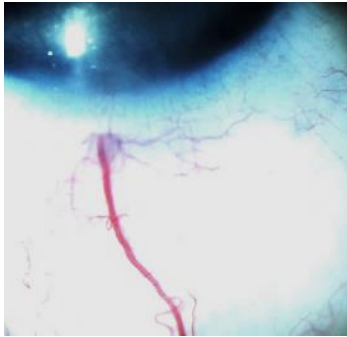


Fig 4. Reduced lesion after one month of ATT

Discussion

Episcleritis is the inflammation of the episcleral that lies superficial to the sclera and deep to the tenon capsule. It has two types, the simple (diffuse) and the nodular type. Simple episcleritis is the most common (70%) and the milder type, meanwhile the nodular type (30%) causes more pain[2],[4]. Episcleritis is mostly idiopathic, only one third of cases are found to be related with systemic condition with the leading cause is rheumatoid disease. Single episode of episcleritis does not require extensive laboratory work up, however, patients who experience recurrent attacks requires systemic evaluation[4]. Some patients may experience significant pain or discomfort, apart from the causal treatment, supportive therapy may be given, such as cool compress, oral nonsteroidal anti-inflammatory drug (NSAID), artificial tears, and topical steroid one to four times daily[1].

TB is an infectious disease caused by *Mycobacterium tuberculosis* (*M.Tb*) and is leading infectious cause of death and variety of diseases throughout the body, especially in endemic region [2],[6]. Most TB infection is pulmonary type, but extrapulmonary TB occurs in 14% cases worldwide [7]. In India, as many as 25.7% cases of uveitis is infectious and 46.29% of them are TB uveitis[8]. Meanwhile in Indonesia, which also TB endemic country, infectious uveitis was stated as many as 33% and 25% of them were TB related[9]. The most common presentation of ocular TB are posterior uveitis (42%) and anterior uveitis (36%)[10], meanwhile association of TB with episcleritis is very rare[5].

Further systemic investigation when suspecting ocular TB cases is important, it includes Mantoux or IGRA test, chest radiograph to evaluate active and or healed TB lesion, and further evaluation of other TB sites[11]. IGRA test is considered as more objective examination than Mantoux or tubercular skin testing (TST)[12]. In the other hand, Sharma *et al.* in 2016 in their large study showed similar conclusion as World Health Organization (WHO) has mentioned before that in resource and cost limited, low to middle income countries, TST still is a mainstay examination for TB[13]. Mantoux test result has different interpretations according to the endemic status. In TB endemic region, immunocompetent patient with larger than 10 mm induration after 48-72 hours is considered as TB positive[14]. A positive Mantoux test is highly suggestive, but not conclusive, since the definitive prove is the finding of *M.Tb* in tissue or intraocular fluid by histopathological examination or polymerase chain reaction (PCR) test [11]. Chest radiograph was done to evaluate any evidence of pulmonary TB, as the most common site of TB, which was not found in this case. Therapeutic test also may work as diagnostic process of ocular TB, is an observation of improvement over four to six weeks of ATT[11] This case also had improvement at two weeks follow up and even more positive response at four

weeks follow up.

There are several similar reports of nodular episcleritis and its association with TB in India. Porwal *et al.* reported a case of 12-year-old girl with bilateral nodular episcleritis for one and a half years that persisted after steroid treatment. Had positive Mantoux test without any chest radiograph abnormality. She was given prednisolone acetate 1% with tapering dose of seven days and ATT. On the fifteenth day of follow up, lesions were reduced, on third month she presented with slight reddish hue, and on sixth month all symptoms and signs completely subsided without any recurrence[4]. Yadav *et al.* reported adult case of 30-year-old male with unilateral nodular episcleritis with mild productive cough. Sputum microscopy was negative for acid-fast bacilli (AFB), normal chest radiograph but positive Mantoux test. The patient was treated with lubricant also ATT and showed positive response[2]. Kumar *et al.* delivered a case of 33-year-old female with unilateral nodular episcleritis for one month that remains after steroid medication. Conjunctival swab was performed with negative AFB result, chest radiograph was normal, but had positive Mantoux test. After receiving ATT, patient showed significant improvement [3].

We encountered a case of tubercular episcleritis by the history of recurrent episode which not responding with regular medication, positive Mantoux test and Indonesia's TB endemic status. Additionally, improvement after ATT also confirmed the diagnosis.

Conclusion

This case suggests that TB infection may cause episcleritis. In endemic countries, consideration about TB should be contemplated in treating recurrent episcleritis cases to avoid unnecessary complications.

Acknowledgements

We would like to thank all our colleagues in KMU Eye Clinic for their opportunity and support.

References

- Jabs DA, Mudun A, Dunn JP, Marsh MJ. Episcleritis and scleritis: Clinical features and treatment results. *Am J Ophthalmol.* 2000;130(4):469–76.
- Yadav S, Rawal G. Tubercular nodular episcleritis: A case report. *J Clin Diagnostic Res.* 2015;9(8):ND01–2.
- Kumar P, Kumari D, Shekhar C, Singh R. Rare Presentation of Nodular Episcleritis with Tuberculosis. *Int J Contemp Med Res.* 2016;3(9):2701–2.
- Porwal A. Rare Presentation of Nodular Episcleritis with Tuberculosis in A 12 Year Old Girl: A Case Report. *Delhi J Ophthalmol.* 2021;31(4):93–5.
- Hase K, Namba K, Saito W, Ohno S, Ishida S. A case of tuberculous endophthalmitis successfully treated with vitrectomy followed by antituberculous agents. *J Ophthalmic Inflamm Infect.* 2015;5(1):0–3.
- Rodriguez-Takeuchi SY, Renjifo ME, Medina FJ. Extrapulmonary tuberculosis: Pathophysiology and imaging findings. *Radiographics.* 2019;39(7):2023–37.
- Shakarchi FI. Ocular tuberculosis: Current perspectives. *Clin Ophthalmol.* 2015;9:2223–7.
- La Distia Nora R, Sitompul R, Bakker M, Susiyanti M, Edwar L, Sjamsoe S, et al. Tuberculosis and other causes of uveitis in Indonesia. *Eye.* 2018;32(3):546–54.
- Parchand S, Gupta V, Gupta A, Sharma A. Intraocular Tuberculosis. 2013;(December).
- Alvarez GG, Roth VR, Hodge W. Ocular tuberculosis: diagnostic and treatment challenges. *Int J Infect Dis.* 2009;13(4):432–5.
- Gupta A, Sharma A, Bansal R, Sharma K. Classification of intraocular tuberculosis. *Ocul Immunol Inflamm.* 2015;23(1):7–13.
- Sudharshan S, Kaleemunnisha S, Banu AA, Shrikrishna S, George AE, Babu BR, et al. Ocular lesions in 1,000 consecutive HIV-positive patients in India: A long-term study. *J Ophthalmic Inflamm Infect.* 2013;3(1):1–7.
- Sharma SK, Vashishtha R, Chauhan LS, Sreenivas V, Seth D. Comparison of TST and IGRA in diagnosis of latent tuberculosis infection in a high TB-burden setting. *PLoS One.* 2017;12(1):1–11.
- Nayak S, Acharjya B. Mantoux test and its interpretation. *Indian Dermatol Online J.* 2012;3(1):2.