

Guest editorial

Infectious uveitis: Recent advances in diagnosis and treatment

Pathanapitoon K¹, Stilma J S²

¹Associate Professor, Department of Ophthalmology, Chiang Mai University,
110 Intawaroros Road, Chiang Mai 50200, Thailand
Tel. (+66)-53-945512 E-mail: kpathana@med.cmu.ac.th

²Professor Emeritus of Ophthalmology, University Medical Centre, Utrecht, The Netherlands and
Honorary consultant Sierra Leone
Hooivaartsweg 4, 8459 ET LUINJEBERD, The Netherlands
Tel. (+31)-0513-528 707 E-mail: j.stilma@hetnet.nl

Uveitis can be caused by a number of different infectious agents, requiring a robust clinical experience and appropriate diagnostic tools for accurate diagnosis and treatment. A definitive diagnosis of infectious uveitis can be determined with laboratory investigations including polymerase chain reaction (PCR) analysis of intraocular fluids and the Goldmann-Witmer coefficient for local antibody production. However, in many eye care centers, these laboratory analyses are not available due to prohibitively high costs and accessibility. In these situations, a literature review of proven causes is essential to the ophthalmologist in order to make a diagnosis and devise the most effective treatment strategy for each case.

Over the past few decades, there has been growing awareness of cytomegalovirus (CMV)-associated anterior uveitis (AU), which represents a distinct clinical entity that occurs in immunocompetent patients and has primarily been reported in Asia. In a recent series from Northern Thailand, 10 out of 30 (33%) immunocompetent patients with a negative initial screening for AU were confirmed to have CMV by PCR (Kongyai *et al*, 2012). CMV-associated AU commonly presents as a recurrent unilateral hypertensive AU that is associated with typical keratic precipitates (KPs) (white, medium sized, nodular deposits), iris atrophy, and the absence of posterior synechiae. Some cases may present with corneal endotheliitis associated with KPs. The KPs are usually seen in the inferior half of the cornea and may be diffuse, linear, ring-shaped, or appear as a coin-like lesion. Additionally, they may be associated with immune ring formation. Fuch's heterochromic iridocyclitis and Posner-Schlossman syndrome have also been associated with CMV. Fuch's heterochromic iridocyclitis is a type of chronic uveitis associated with fine stellate KPs, iris atrophy, and cataract in the absence of synechiae. Posner-Schlossman syndrome is characterized by recurrent episodes of unilateral low-grade AU with acute onset of highly elevated intraocular pressure above 40 mm Hg without previous therapy. Currently, the treatment for CVM-associated AU includes systemic ganciclovir, intravitreal ganciclovir injections or topical ganciclovir gel for a minimum of three months. However, the overall recurrence rate is about 75.0% following antiviral therapy and do not greatly differ from eyes that did not receive antiviral treatment. Topical ganciclovir gel has a lower response rate, a lower relapse rate (25-50%) and fewer adverse effects (Jap & Chee, 2011).

Another common cause of infectious uveitis is ocular toxoplasmosis (OT). OT is characterized by necrotizing retinitis that is frequently located near a retinochoroidal scar and is associated with vitreous and anterior chamber inflammation. However, in primary OT, a chorioretinal scar may be absent. Atypical clinical features of OT that have been reported include isolated anterior uveitis, intraocular inflammatory reactions without focal necrotizing retinochoroiditis, serous retinal detachment, choroiditis without retinitis, occlusive

retinal vasculitis, neuroretinitis and papillitis. Laboratory diagnosis of OT is determined by direct detection of *T gondii* DNA with PCR and/or indirect detection of infection by detection of *T gondii*-specific antibodies using the Goldmann-Witmer coefficient or serology for anti-*T gondii* IgG or IgM. The addition of an anti-*T gondii* IgA assay or IgG avidity increases the sensitivity of identification in cases of recently acquired toxoplasmosis. A thorough assessment requires multiple laboratory tests at different time points.

Treatment regimens include the following combinations:

1. pyrimethamine, sulfadiazine and leucovorin;
2. trimethoprim–sulfamethoxazole;
3. pyrimethamine, sulfadiazine, and clindamycin;
4. sulfadiazine and clindamycin;
5. pyrimethamine and clindamycin;
6. azithromycin alone or combined with either pyrimethamine or trimethoprim–sulfamethoxazole; and
7. intravitreal clindamycin, with a dosage ranging from 1.0 mg/0.1 mL to 1.5 mg/0.1 mL, given once or 3–4 times.

The effect of intravitreal clindamycin alone for ocular toxoplasmosis has not yet been evaluated.

Finally, human immunodeficiency virus (HIV) has been identified as another infectious agent associated with uveitis. Ocular manifestations in HIV-infected patients occur as a result of progressive immune dysfunction and are caused by opportunistic infections and malignancies. Since the introduction of highly active anti-retroviral therapy (HAART), the prevalence of immune recovery uveitis (IRU) has increased. However, HIV itself can also be a

cause of intraocular inflammation, as several cases of HIV-associated uveitis have been recently reported. A HIV- infected patient with anterior uveitis had an intraocular HIV-1 RNA load largely exceeding that of the plasma, with no evidence of other intraocular infectious agents causing uveitis other than HIV itself. Positive intraocular HIV-1 RNA loads are associated with high HIV-1 RNA plasma loads and found in patients who are not undergoing HAART. Clinical features include anterior uveitis with KPs and/or vitritis without retinal lesions or scars that does not respond to topical corticosteroid therapy. Intraocular inflammation subsides after decreasing intraocular and plasma HIV loads following HAART (Pathanapitooon et al, 2011).

In conclusion, though many challenges remain, there has been marked progress in the proper diagnosis and treatment of infectious uveitis in recent years. Institutions with advanced laboratory facilities should pursue research endeavors that can help improve the quality of care provided to patients in ophthalmic clinics around the world.

References

- Jap A, Chee SP (2011). Cytomegalovirus-associated anterior segment infection. *Expert Rev. Ophthalmol*; 6: 517–528.
- Kongyai N, Pathanapitooon K, Sirirungsi W, et al (2012). Viral causes of unexplained anterior uveitis in Thailand. *Eye* 2012 Jan 13. doi: 10.1038/eye.2011.363. [Epub ahead of print].
- Pathanapitooon K, Riemens A, Kongyai N, et al (2011). Intraocular and plasma HIV-1 RNA loads and HIV uveitis. *AIDS*; 25: 81-86.

Source of support: nil. Conflict of interest: none