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Cytomegalovirus retinitis – a local perspective

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Cytomegalovirus retinitis (CMVR) can cause blindness and affects mainly immunocompromised patients. It is most frequently associated with human immunodeficiency virus (HIV) infection or acquired immunodeficiency syndrome (AIDS). In patients with HIV infection/AIDS, the risk of developing CMVR increases when the CD4⁺ count falls below 50 cells/mm³.¹ The lifetime risk of developing CMVR is estimated to be 25% to 40%.² The typical presentation is reduced vision in eyes that lack inflammation. Characteristic fundal findings include whitish retinal infiltrate and prominent retinal hemorrhages, assuming the ‘cheese-on-ketchup’ appearance.^{3,4} Other features include frosted branch angiitis and retinal detachment in late stages.

According to the latest report on the global trend of HIV infection published by the World Health Organization in 2013, cytomegalovirus retinitis remained to occur most commonly in Africa. In Asia, there were 4,967,000 HIV infected patients in 2001 and 6,131,000 in 2012 (23.4% increase).⁵

In Hong Kong, the Department of Health reported 1,672 HIV-infected individuals in Hong Kong as of May 2016.⁶ In Singapore, the HIV-infected population was 6,829 in 2015, according to the Ministry of Health in Singapore.⁷ Although the prevalence of HIV infection remains relatively low in Hong Kong, efforts should be made to prevent this dreadful disease from spreading and its complications from arising.

In a cohort of 18,733 HIV-infected subjects in the United

States, the annual incidence of CMVR was reported to be 45.3% during 1993 to 1995 prior to the introduction of the highly active antiretroviral therapy, and subsequently dropped to 8.8% during 1996 to 2000 and further to 1.5% during 2001 to 2008.⁸ Successful suppression of the HIV virus enables infected patients to remain disease-free and at lower risk of developing CMVR.

The focus for CMVR has shifted to non-HIV infected individuals who are immunosuppressed because of treatment for diseases/conditions such as cancer, chemotherapy, organ transplantation, and autoimmune diseases.⁹ In Hong Kong, the seropositivity rate for CMV has been reported to be 90%,¹⁰ which is comparable with other Asia-Pacific countries. In China, the rate was reported to be as high as 98.7% among a group of pregnant women in the Jiangsu Province.¹¹ Other nearby countries/regions have also reported high seropositivity rates.^{12,13} The rate in Asia-Pacific is much higher than that in Europe¹⁴⁻¹⁶ or the US.¹⁷ The differences between HIV- and non-HIV-infected patients with CMVR in terms of clinical features and visual prognosis have been reported.¹⁸

Presence of CMVR is not necessarily associated with CMV seropositivity.^{18,19} This implies the possibility of end-organ infection/reactivation in the absence of seropositivity.¹⁸ This occurs most commonly in the eye, presenting as CMVR, and the gut, presenting as CMV enteritis.²⁰ CMV also affects the corneal endothelium in the form of endotheliitis.²¹ In view of this, the use of local anti-CMV therapy may be more

effective than systemic therapy, although the importance of eradicating CMV systemically cannot be overlooked.¹⁸

In this issue, Cheung and Kwong²² reviewed the various causes, clinical presentations and treatments for CMV infection. This provides a reference for CMV infection beyond CMVR and enables ophthalmologists to formulate treatment plans for such patients.

In addition, Shih et al²³ and Ng et al²⁴ each wrote a perspective article to report the major research focuses and achievements of the 2 local ophthalmology institutions. This

year marks the 10th and 22nd anniversary of the establishment of the Department of Ophthalmology of The University of Hong Kong and the Department of Ophthalmology and Visual Science of The Chinese University of Hong Kong, respectively. Readers can appreciate the efforts made by local scientists in vision research, from bench to bedside. Both institutions have together put Hong Kong in the forefront of ophthalmology. With the years to come, it is undoubted that more achievement will be accomplished. On behalf of the Editorial Board, I would like to take this opportunity to congratulate both institutions on their achievements, and wish them many fruitful years to come.

References

1. Wiegand TW, Young LH. Cytomegalovirus retinitis. *Int Ophthalmol Clin*. 2006;46:91-110.
2. Walmsley SL, Raboud J, Angel JB, et al. Long-term follow-up of a cohort of HIV-infected patients who discontinued maintenance therapy for cytomegalovirus retinitis. *HIV Clin Trials*. 2006;7:1-9.
3. Holland GN, Vaudaux JD, Jeng SM, et al. Characteristics of untreated AIDS-related cytomegalovirus retinitis. I. Findings before the era of highly active antiretroviral therapy (1988 to 1994). *Am J Ophthalmol*. 2008;145:5-11.
4. Holland GN, Vaudaux JD, Shiramizu KM, et al. Characteristics of untreated AIDS-related cytomegalovirus retinitis. II. Findings in the era of highly active antiretroviral therapy (1997 to 2000). *Am J Ophthalmol*. 2008;145:12-22.
5. Global update on HIV treatment 2013: results, impact and opportunities. Available from: <http://www.who.int/hiv/pub/progressreports/update2013/en/>. Accessed July 1 2016.
6. CHP reviews local HIV/AIDS situation in first quarter of 2016. Available from: <http://www.info.gov.hk/aids/chinese/press/2016/160531.htm>. Accessed July 1 2016.
7. Update in the HIV/AIDS situation in Singapore 2015. Available from: https://www.moh.gov.sg/content/moh_web/home/statistics/infectiousDiseasesStatistics/HIV_Stats/update-on-hiv-aids-situation-in-singapore-2015.html. Accessed July 1 2016.
8. Schwarcz L, Chen MJ, Vittinghoff E, Hsu L, Schwarcz S. Declining incidence of AIDS-defining opportunistic illnesses: results from 16 years of population-based AIDS surveillance. *AIDS*. 2013;27:597-605.
9. Chan TS, Cheung CY, Yeung IY, et al. Cytomegalovirus retinitis complicating combination therapy with rituximab and fludarabine. *Ann Hematol*. 2015;94:1043-7.
10. Kangro HO, Osman HK, Lau YL, Heath RB, Yeung CY, Ng MH. Seroprevalence of antibodies to human herpesviruses in England and Hong Kong. *J Med Virol*. 1994;43:91-6.
11. Zhang S, Hu L, Chen J, Xu B, Zhou YH, Hu Y. Cytomegalovirus seroprevalence in pregnant women and association with adverse pregnancy/neonatal outcomes in Jiangsu Province, China. *PLoS One*. 2014;9:e107645.
12. Shigemi D, Yamaguchi S, Otsuka T, Kamoi S, Takeshita T. Seroprevalence of cytomegalovirus IgG antibodies among pregnant women in Japan from 2009-2014. *Am J Infect Control*. 2015;43:1218-21.
13. Chen MH, Chen PC, Jeng SF, et al. High perinatal seroprevalence of cytomegalovirus in northern Taiwan. *J Paediatr Child Health*. 2008;44:166-9.
14. Cannon MJ, Schmid DS, Hyde TB. Review of cytomegalovirus seroprevalence and demographic characteristics associated with infection. *Rev Med Virol*. 2010;20:202-13.
15. Korndewal MJ, Mollema L, Tcherniaeva I, et al. Cytomegalovirus infection in the Netherlands: seroprevalence, risk factors, and implications. *J Clin Virol*. 2015;63:53-8.
16. Hassan J, O'Neill D, Honari B, et al. Cytomegalovirus infection in Ireland: seroprevalence, HLA Class I alleles, and implications. *Medicine (Baltimore)*. 2016;95:e2735.
17. Bate SL, Dollard SC, Cannon MJ. Cytomegalovirus seroprevalence in the United States: the national health and nutrition examination surveys, 1988-2004. *Clin Infect Dis*. 2010;50:1439-47.
18. Iu LP, Fan MC, Lau JK, Chan TS, Kwong YL, Wong IY. Long-term follow-up of cytomegalovirus retinitis in non-HIV immunocompromised patients: clinical features and visual prognosis. *Am J Ophthalmol*. 2016;165:145-53.
19. Cheung CY, Wong IY, Yan KW, Kwong YL. Cytomegalovirus oral lesions: harbinger of retinitis in the absence of viraemia. *Ann Hematol*. 2014;93:1613-5.
20. van Burik JA, Lawatsch EJ, DeFor TE, Weisdorf DJ. Cytomegalovirus enteritis among hematopoietic stem cell transplant recipients. *Biol Blood Marrow Transplant*. 2001;7:674-9.
21. Kam KW, Leung KS, Kwok RP, et al. Clinical features, diagnosis and treatment outcomes of cytomegalovirus endotheliitis in Hong Kong. *Acta Ophthalmol*. 2016 [in press].
22. Cheung CY, Kwong YL. Cytomegalovirus infection in non-human immunodeficiency virus-infected patients: a hematologist perspective. *Hong Kong J Ophthalmol*. 2016;20:65-8.
23. Shih KC, Wong IY, Ng AL, Lai JS. Establishing research in ophthalmology and visual sciences at the University of Hong Kong: an institution profile. *Hong Kong J Ophthalmol*. 2016;20:47-51.
24. Ng TK, Chen LJ, Yip YW, Pang CP, Tham CC. The Chinese University of Hong Kong Ophthalmic Research Centre: from the past to the future. *Hong Kong J Ophthalmol*. 2016;20:52-64.