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Incidence of Cytomegalovirus Retinitis in Patients With Human Immunodeficiency Virus Following Negative Initial Screening Examination Results

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Keywords

cytomegalovirus retinitis; HIV/AIDS

INTRODUCTION

Cytomegalovirus (CMV) retinitis is an important cause of blindness among individuals with human immunodeficiency virus (HIV) and AIDS.¹ While the prevalence has decreased in some countries owing to widespread antiretroviral therapy, CMV retinitis is still found in up to one-third of patients with HIV and AIDS in Southeast Asia.^{2,3} Screening for CMV retinitis is important for the prevention of blindness, but it is unclear how frequently patients should be rescreened after having negative results on an initial examination, especially in settings with good access to antiretroviral therapy.

METHODS

In this retrospective study, we identified and reviewed the records of all patients with HIV seen for an initial screening examination for CMV retinitis at the Ocular Infectious Diseases Clinic, Chiang Mai University, Chiang Mai, Thailand, from July 6, 2006, to December 24, 2009. Collected data included diagnosis of CMV retinitis, age, sex, CD4 lymphocyte count, visual acuity, presence of HIV retinopathy, and treatment with antiretroviral drugs. We calculated the incidence of CMV retinitis in patients who initially had negative results on a screening examination, stratified by baseline characteristics. We used the Mantel-Haenszel rate ratio to assess for risk factors associated with incident CMV retinitis following negative results on an initial screening examination. Ethical approval was obtained from the Research Ethics Committee at Chiang Mai University and from the Committee for Human Research at the University of California, San Francisco.

RESULTS

Of 597 patients with HIV identified, 469 patient records were available for review. On initial examination, 238 of these patients were diagnosed as having CMV retinitis and 22 had non-CMV retinitis pathological findings. Of the remaining 195 patients, 127 were examined at least once more. Seven of these patients were subsequently diagnosed as having CMV retinitis (incidence, 3.7/100 person-years; 95% CI, 1.8–7.8), 4 of whom developed bilateral disease. Retinitis in these 11 eyes was characterized by peripheral involvement (no optic disc or macular involvement in 10 eyes), small lesion size (<10% of retinal surface area in 6 eyes), and good visual acuity (20/40 in 6 eyes). The median time until diagnosis was 5.1 months (interquartile range, 2.3–27.8 months). At the time of diagnosis, all patients were receiving antiretroviral agents (median duration of therapy, 3.0 months; interquartile range, 1.0–16.3 months), although the self-reported CD4 lymphocyte count remained below 100/ μ L in 5 patients.

The Table summarizes the incidence of CMV retinitis stratified by baseline characteristics. Patients not receiving antiretroviral agents at the initial screening were significantly more likely to develop CMV retinitis (rate ratio=13.39; 95% CI, 2.62–68.45). Also, CMV retinitis was more common in patients with a CD4 lymphocyte count below 100/ μ L, although this relationship did not achieve statistical significance (rate ratio=5.90; 95% CI, 0.73–47.63).

COMMENT

At a medical center in Thailand responsible for the care of all CMV retinitis cases in Chiang Mai, CMV retinitis was diagnosed infrequently after negative results on an initial screening examination—approximately 4% per year. This incidence is higher than that currently seen in the United States (0.24/100 person-years),⁴ consistent with what is believed to be a higher prevalence of CMV retinitis in Southeast Asia.² The severity of CMV retinitis in these patients was milder than that of the retinitis detected on initial screening, likely because it was identified early owing to routine screening.⁵ As expected, patients not receiving antiretroviral agents at the time of initial screening were at greater risk for subsequent development of CMV retinitis.

Limitations of the study include its retrospective nature, the low number of CMV retinitis cases after initial screening, and the proportion of patients lost to follow-up (35%) or missing medical records (21%). Referral bias also limits the study because patients in this setting tend to not receive routine CMV retinitis screening but instead are referred to the clinic when visual symptoms manifest.

In summary, 97.1% of patients with CMV retinitis examined in Chiang Mai were diagnosed as having CMV retinitis at the initial screening visit, suggesting that a single screening examination may be sufficient to diagnose the vast majority of CMV retinitis cases in this setting. Ophthalmologic screening remains important to prevent blindness from CMV retinitis.

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REFERENCES

1. Wiegand TW, Young LH. Cytomegalovirus retinitis. *Int Ophthalmol Clin.* 2006; 46(2):91–110.
2. Heiden D, Ford N, Wilson D, et al. Cytomegalovirus retinitis: the neglected disease of the AIDS pandemic. *PLoS Med.* 2007;4(12):e334. [PubMed: 18052600]
3. Ausayakhun S, Watananikorn S, Ittipunkul N, Chaidaroon W, Patikulsila P, Patikulsila D. Epidemiology of the ocular complications of HIV infection in Chiang Mai. *J Med Assoc Thai.* 2003;86(5):399–406. [PubMed: 12859094]
4. Jabs DA, Ahuja A, Van Natta M, Lyon A, Srivastava S, Gangaputra S; Studies of the Ocular Complications of AIDS Research Group. Course of cytomegalovirus retinitis in the era of highly active antiretroviral therapy: five-year outcomes. *Ophthalmology.* 2010;117(11):2152–2161, e1-e2. [PubMed: 20673591]
5. Ausayakhun S, Keenan JD, Ausayakhun S, et al. Clinical features of newly diagnosed cytomegalovirus retinitis in northern Thailand [published online January 19, 2012]. *Am J Ophthalmol.* doi:10.1016/j.ajo.2011.10.012.

Table.

Incidence of CMV Retinitis Among Patients With Negative Results on Initial Screening Examination at an Ocular Infectious Diseases Clinic in Chiang Mai, Thailand, Between 2006 and 2009, Stratified by Baseline Characteristics

Baseline characteristic	Developed CMV retinitis	Did Not Develop CMV Retinitis	CMVR Incidence/100 Person-Years ^a	RR (95%CI) ^b	p-value
Sex					
Male	4	58	4.6 (1.7 – 12.3)	1.57 (0.35–7.07)	0.55
Female	3	62	3.0 (1.0 – 9.2)		
CD4					
<100 cells/ml	6	54	6.8 (3.1–15.1)	5.90 (0.73–47.63)	0.06
100 cells/ml	1	51	1.2 (0.2–8.6)		
Antiretroviral					
No	5	19	19.1 (8.0–46.0)	13.39 (2.62–68.45)	<0.001
Yes	2	92	1.3 (0.3–5.3)		
HIV retinopathy ^c					
Yes	2	13	7.9 (2.0–31.6)	2.93 (0.54–15.80)	0.19
No	5	107	3.1 (1.3–7.4)		
Visual acuity ^c					
<20/40	2	44	3.6 (1.3–9.6)	0.83 (0.15–4.71)	0.83
20/40	4	71	3.1 (0.8–12.4)		

Abbreviations: CMV, cytomegalovirus; HIV, human immunodeficiency virus; RR, rate ratio.

^aIncludes CMV retinitis in either eye

^bMantel-Haenszel estimate of RR

^cPresence of characteristic in worse eye