Journal of Mental Disorders and Treatment

Kalantari, J Ment Disord Treat 2015, 1:1
DOI: 10.4172/2471-271X.1000101

Case Report Open Access

CMV Encephalitis with Brain Stem Involvement without Evidence of CMV Retinitis two Weeks after Initiation of Art

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Abstract

Cytomegalovirus (CMV) is DNA virus that can cause end-organ disease in patients with advanced immunosuppression end-organ disease in patients with advanced immunosuppression In HIV-infected persons, CMV can infect the GI tract, liver, lung, and nervous system We report rare case of an HIV-infected patient who presented with CMV encephalitis with brain stem involvement without evidence of CMV retinitis two weeks after initiation of ART.

Keywords: DNA; Immunosuppression; Cryptococal antigen; Ventriculoencephalitis; Ganciclovir

Introduction

Cytomegalovirus (CMV) is a double-stranded DNA virus in the herpes virus family that can cause disseminated or localized end-organ disease in patients with advanced immunosuppression. End-organ disease caused by CMV occurs in patients with advanced immunosuppression, typically those with CD4 T-lymphocyte cell (CD4) counts <50 cells/mm^3, who are either not receiving or have failed to respond to antiretroviral therapy (ART) [1-3].

Cytomegalovirus (CMV) is found universally throughout all geographic and socioeconomic areas and infects an estimated 40% to 100% of adults by the fourth decade of life. In addition, almost all homosexual men with HIV are coinfected with CMV [4-6].

In HIV-infected persons, CMV can infect the GI tract, liver, lung, and nervous system. CMV can also infect the retina and is the leading cause of blindness in the HIV population [7,8].

The most common manifestation of CMV disease is CMV retinitis, which accounts for 85% of all cases of CMV clinical syndromes. GI disease is also a common manifestation, accounting for approximately 15% of cases, and includes esophagitis, colitis, gastritis, and hepatitis. Clinical CMV disease of the nervous system, including encephalitis, accounts for less than 1% of all CMV disease. CMV encephalitis results in a mortality rate of approximately 100% in those who are not treated, with a median survival of less than 2 months following the onset of neurological symptoms [3,8,9].

We report the following rare case of an HIV-infected patient who presented with CMV encephalitis with brain stem involvement without evidence of CMV retinitis two weeks after initiation of ART.

Case Summary

A 27-year-old wonam presented to the emergency department with vomiting, headache, vertigo, and confusion with mental status change without fever. She also reported a 10- to 15-lb weight loss during the past month. The patient had been at the same hospital 6 weeks earlier and was discharged with a diagnosis of pneumocystis jirroveci pneumonia her HIV Elisa test was positive that confirmed with western blot. She treated with trimethoprim/sulfamethoxazole 5 weeks earlier and ART from 2 weeks ago.

Her recent CD4+ cell count, which was obtained 4 weeks earlier, was 45/μL, and her HIV RNA level was greater than 445,000 copies/mL.

On admission, her vital signs were blood pressure, 120/80 mm Hg; respiratory rate, 16 breaths per minute; pulse rate, 88 beats per minute; and temperature, 37.6°C. Findings from his physical examination were remarkable for ataxia and abnormal cerebellar test. Because of his mental status change headache and history of an AIDS diagnosis, a lumbar puncture was performed, which yielded an opening pressure of 17 cm H_2O; glucose level, 69 mg/dL; protein level, 61 mg/dL; white blood cells 6; and red blood cell count, 12/μL.

Laboratory tests performed on admission were a complete blood count, comprehensive metabolic profile, VDRL test, urinalysis, and 2 sets of blood cultures. In addition, cerebrospinal fluid (CSF) was tested for herpes simplex virus, CMV, Cryptococcus antigen, mycobacterium tuberculosis and JC virus. Abnormal laboratory values were white blood cell count, 2800/μL (normal, 4000 to 12,000), with 67% PMN. An MRI scan revealed Bilateral poorly defined abnormal signal intensity is noted in the cerebellum on T2 and FLAIR. It extended into the middle peduncle and also partially in the pons. It is more prominent in the white matter. It also shows irregular poorly defined enhancement. The finding are suspicious for acute cerebellitis (Figure 1).

On ophthalmology consultation, HIV retinopathy with no signs or symptoms of CMV retinitis was found. On day 4, CSF mycobacterium tuberculosis PCR, Cryptococal antigen, JC virus PCR and HSV PCR were negative, and results of a CMV qualitative DNA polymerase chain reaction (PCR) test showed positive in the CSF. Ganciclovir was restarted.

The patient's mental status did not improve over the course of the week. One week after beginning of treatment, she was expired.

Discussion

CMV neurologic disease includes dementia, ventriculoencephalitis, and polyradiculomyelopathies. Patients with dementia caused by

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Received September 29, 2015; **Accepted** December 17, 2015; **Published** December 30, 2015

Citation: Kalantari S (2015) CMV Encephalitis with Brain Stem Involvement without Evidence of CMV Retinitis two Weeks after Initiation of Art. J Ment Disord Treat 1: 101. doi:10.4172/2471-271X.1000101

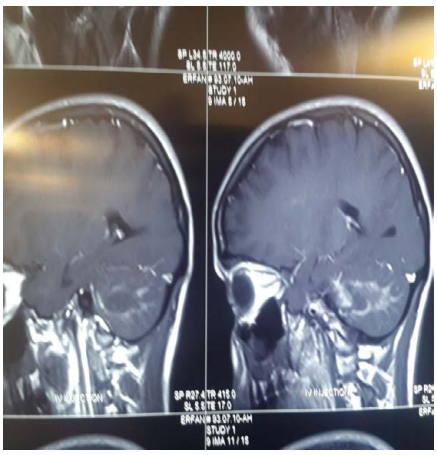

Figure 1: Acute Cerebellitis.

CMV encephalitis typically have lethargy, confusion, and fever. Cerebrospinal fluid (CSF) typically demonstrates lymphocytic pleocytosis (although a mixture of neutrophils and lymphocytes might be evident), low-to-normal glucose levels, and normal-to-elevated protein levels. Patients with ventriculoencephalitis have a more acute course, with focal neurologic signs, often including cranial nerve palsies or nystagmus, and rapid progression to death. Periventricular enhancement of computed tomography or magnetic resonance images is highly suggestive of CMV ventriculoencephalitis rather than HIV-related neurologic disease [10].

A diagnosis of CMV encephalitis in HIV patients is not rare. In the pre-HAART era, 15% to 76% of HIV-seropositive patients were found at autopsy to have evidence of CMV in the brain. Also in these autopsy series, CMV encephalitis was more commonly found in HIV-infected patients than in organ transplant recipients [3,11].

Immune reconstitution inflammatory syndrome (IRIS, or immune reconstitution disease) is a clinical entity characterized by an excessive inflammatory response to a preexisting antigen or pathogen and a paradoxical deterioration in clinical status after initiation of antiretroviral therapy (ART) [1-4]. IRIS may present in 2 different ways: (1) the "paradoxical" worsening of symptoms of a known disease, either at a new body site or at the original body site, or (2) the "unmasking" of an occult opportunistic infection, in which disease that was not clinically apparent prior to ART manifests during ART [12].

Among the organs that can become the target of an abnormal immune response due to the CD8 dysfunction triggered by HAART is the brain [13]. In an HIV patient noncompliant to antiretroviral therapy and to treatment for CMV colitis, CMV encephalitis developed, characterized by both typical and atypical imaging features. Instead of the more typical MR imaging findings of ventriculitis or even solitary focal mass lesions, this patient, who died from his CMV encephalitis, had MR imaging showing widespread multifocal areas of restricted diffusion and faint solid or peripheral enhancement in both the supra- and infratentorial compartments [12]. Periventricular and corpus callosum white matter was involved as well as subcortical white matter and the basal ganglia, brain stem, and cerebellum [14,15].

In another report, an HIV patient developed visual changes 2 weeks after the initiation of HAART attributed to CMV retinitis for which he was treated with anti-CMV therapy. Two weeks thereafter, he developed neurologic changes with rising CD4 counts and falling plasma HIV RNA levels as well as an active vitritis related to CMV-IRIS [12] in our patient two weeks after initiation of ART developed neurologic change without visual findings that seem the "unmasking" of an occult CMV infection.

Therapy for well-documented neurologic disease also has not been extensively studied. Given the poor outcomes in many patients with CMV-related neurologic disease, some experts would initiate therapy with both IV ganciclovir and IV foscarnet, despite the substantial toxicities associated with such an approach. Optimizing ART is important, as in all types of CMV disease. The optimal duration of therapy and the role of oral valganciclovir have not been established [8,16,17].

References

1. Jabs DA, Van Natta ML, Kempen JH, Reed PP, Lim JI, et al. (2002) Characteristics of Patients With Cytomegalovirus Retinitis in the Era of Highly Active Antiretroviral Therapy. Am J Ophthalmol 133: 48-61.
2. Dieterich DT, Rahmin M (1991) Cytomegalovirus colitis in AIDS: presentation in 44 patients and a review of the literature. J Acquir Immune Defic Syndr 4: 29-35.
3. Arribas JR, Storch GA, Clifford DB, Tselis AC (1996) Cytomegalovirus encephalitis. Ann Intern Med 125: 577-587.
4. Pillay D, Griffiths PD (1992) Diagnosis of cytomegalovirus infection: a review. Genitourin Med 68: 183-188.
5. Collier AC, Meyers JD, Corey L, Murphy VL, Roberts PL, et al. (1987) Cytomegalovirus infection in homosexual men. Relationship to sexual practices, antibody to human immunodeficiency virus, and cell-mediated immunity. Am J Med 82: 593-601.
6. Drew WL (1992) Cytomegalovirus infection in patients with AIDS. Clin Infect Dis 14: 608-615.
7. Griffiths P (2004) Cytomegalovirus infection of the central nervous system. Herpes 11: 95A-104A.
8. Gallant JE, Moore RD, Richman DD, Keruly J,Chaisson RE (1992) Incidence and Natural history of cytomegalovirus disease in patients with advanced human immunodeficiency virus disease treated zidovudine. The Zidovudine Epidemiology Study Group. J Infect Dis 166: 1223-1227.
9. Anduze Faris BM, Fillet AM, Gozlan J, Lancar R, Boukli N (2000) Induction and maintenance therapy of cytomegalovirus central nervous system infections in HIV-infected patients. AIDS 14: 517-524.
10. Arribas JR, Clifford DB, Fichtenbaum CJ, Commins DL, Powderly WG, et al. (1995) Level of cytomegalovirus (CMV) DNA in cerebrospinal fluid of subjects with AIDS and CMV infection of the central nervous system. J Infect Dis 172: 527-531
11. Morgello S, Cho ES, Nielsen S (1987) Cytomegalovirus Encephalitis in Patients with Acquired immunodeficiency Syndrome. Hum Pathol 18: 289-297.
12. Lewis JH, Philippa JE, Mosa A, Khanyile NG , Parboosing R (2009) Defining Immune Reconstitution Inflammatory Syndrome: Evaluation of Expert Opinion versus 2 Case Definitions in a South African Cohort Oxford Journals Medicine and Health Clinical Infectious Diseases 49: 1424-1432.
13. McCarthy M, Nath A (2010) Neurologic consequences of the immune reconstitution inflammatory syndrome (IRIS). Curr Neurol Neurosci Rep 10: 467-475.
14. Anderson AM, Mosunjac MB, Corey ASet, Fountain JA, Oshinski JN (2011) Simultaneous typical and extraordinary imaging findings of AIDS-associated cytomegalovirus encephalitis. J Neurol Sci 307: 174-177.
15. Anderson AM, Fountain JA, Green SB, Bloom SA, Palmore MP (2010) Human immunodeficiency virus associated cytomegalovirus infection with multiple small vessel cerebral infarcts in the setting of early immune reconstitution. J Neuroviro 116: 179-184.

16. Bylsma SS, Achim CL, Wiley CA, Gonzalez C, Kupperman BD, et al. (1995) The Predictive value of Cytomegalovirus Retinitis for Cytomegalovirus Encephalitis in acquired immunodeficiency syndrome. Arch Ophthalmol 113: 89-95.

17. O'Sullivan CE, Drew LW, McMullen DJ, Miner R, Lee JY, et al. (1999) Decrease of cytomegalovirus replication in human immunodeficiency virus infected-patients after treatment with highly active antiretroviral therapy. J Infect Dis 180: 847-849.