HIV/AIDS
BRIEF REPORTS

Sarcoidosis in a Patient with Acquired Immunodeficiency Syndrome Treated with Interleukin-2

Concomitant human immunodeficiency virus (HIV) infection and sarcoidosis is rare. Sarcoidlike reactions could belong to the “highly active antiretroviral therapy (HAART)–induced immune restitution syndrome.” We report a case of sarcoidosis beginning after 2 months of interleukin-2 (IL-2) therapy in a patient with HIV who had undetectable plasmatic viral load under HAART and we discuss possible mechanisms.

The presence of HIV infection concomitant with sarcoidosis is rare, probably because HIV-induced suppression of CD4 cells may attenuate granuloma formation. Cases of sarcoidosis induced by highly active antiretroviral therapy (HAART) have been recently reported [1–3], suggesting that sarcoidlike reactions could belong to the “HAART-induced immune restitution syndrome.” The use of iv or subcutaneous intermittent IL-2 therapy for HIV type 1 (HIV-1) infection leads to a sustained increase in CD4 T cells [4]. We report a case of sarcoidosis that occurred after 2 months of IL-2 therapy was given to a patient with AIDS who had an undetectable plasma viral load when HAART was used for a long period.

In June 1999, a 36-year-old white man with posttransfusional AIDS presented with fever (temperature, 39°C), dyspnea, and asthenia after receiving 2 months of IL-2 therapy. Cytomegalovirus mononeuropathy multiplex had been diagnosed in October 1994. Treatment with oral ganciclovir was stopped in March 1999. Cerebral toxoplasmosis had been diagnosed in December 1993. The patient was still receiving treatment with sulfadiazine, 2 g/day, and pyrimethamine, 50 mg/day. He also had untreated chronic hepatitis C virus infection with normal levels of aminotransferases and no cholestasis but with persistent viremia. One year earlier, a liver-biopsy sample had been obtained. Grade 1 inflammation and stage 2 fibrosis were noted without granuloma. The serum level of angiotensin-converting enzyme (SACE) was retrospectively found to be elevated (78 IU/mL; normal level, <52 IU/mL) in June 1998.

In April 1999, the CD4 count was 183 cells/mm³, compared with the CD4 count of 8 cells/mm³ that was observed when HAART was started in June 1996. The HIV RNA level had remained at <50 copies/mL for 33 months. HAART (consisting of lamivudine, 150 mg b.i.d.; abacavir, 300 mg b.i.d.; nelfinavir, 750 mg t.i.d.; and nevirapine, 200 mg b.i.d.) had been unchanged for 14 months. Subcutaneous IL-2 therapy (4.5 million units [MU] b.i.d. for 5 days every month) was added to treatment in April 1999.

The patient was hospitalized in June 1999. On admission, physical examination showed only a few basal crackles. A chest x-ray film and lung CT scan showed diffuse interstitial micronodular lesions. The C-reactive protein level was 7 mg/L, and cholestasis was noted. Analysis of bronchoalveolar lavage (BAL) showed a lymphocytic alveolitis (370 cells/mm³; 52% lymphocytes, 39% CD4 cells, and 60% CD8 cells). Biopsy specimens of the bronchi, liver, and accessory salivary glands revealed well-formed noncaseating granuloma. The results of cultures performed on blood, sputum, fibrospiration, BAL, and liver specimens remained negative for mycobacteria, fungi, viral agents, and opportunistic bacteria. The patient’s SACE level was 105 IU/mL. IL-2 therapy was stopped, without other treatment modification. Fever and dyspnea resolved within 1 month. In November 1999, the SACE level was 107 IU/mL, but the results of hepatic tests and chest x-ray films had returned to normal. The CD4 count was 296 cells/mm³. The plasma HIV RNA viral load remained at <50 copies/mL. In April 2000, the SACE level was 25 IU/mL, and the CD4 count was 260 cells/mm³.

Exaggerated responses to viruses, mycobacteria, or fungi [5] that occur shortly after the initiation of HAART in patients infected with HIV (probably in relation to an antigen-specific T-cell response) have been reported. Delayed-occurrence complications of HAART have also been reported; they include arthritis due to type II mixed cryoglobulinemia [6], Graves’ disease [7], cryptocoecal lymphadenitis [8], cytomegalovirus vitritis [9], and, recently, 4 cases of sarcoidosis [1–3]. Such a sarcoidlike granuloma formation probably involves naïve and IL-2 receptor–positive CD4 T cells, rather than memory T cells, because recovery of naïve and IL-2 receptor–positive CD4 T cells is delayed for 3–6 months after introduction of HAART, whereas recovery of memory T cells appears after a delay of 3 weeks [10]. The restoration of normal production of IL-2 by CD4 T cells generally appears within 9 months [11].

Our observation differs from the other reported case of IL-2–induced sarcoidosis in a patient with HIV infection [2], because, in our patient, the plasma viral load had already been undetectable for a long period when IL-2 therapy was started. Sarcoidosis developed within 2 months of initiation of IL-2 therapy. IL-2 toxicity per se cannot be excluded, but it has never been described. Sarcoidosis associated with cytokine therapy has only been reported with IFN-α used to treat chronic hepatitis C in non–HIV-infected patients [12]. IL-2 plays a pivotal role in the pathology of sarcoidosis [13]. We suggest that IL-2 therapy was a triggering factor, acting as a potent stim-
ulimator of the T-helper type 1 (Th1) immune response, rather than a causative factor. We think that IL-2 therapy exacerbated granuloma formation in a patient whose CD4 T cells did not recover a normal ability to produce IL-2 during treatment with HAART.

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References

Occupational Transmission of Human Immunodeficiency Virus and Hepatitis C Virus after a Punch

Although the simultaneous transmission of either human immunodeficiency virus (HIV) and hepatitis C virus or HIV or hepatitis B virus from a single source has already been described, this is the first case of transmission to occur after a blow with the fist.

Awareness of the risk of occupational transmission of HIV to health care workers dates back to December 1984, when the first case of needlestick-transmitted HIV infection was reported [1]. From December 1984 through September 1997, a total of 94 documented cases and 170 possible cases of occupational transmission of HIV to health care workers were reported worldwide. However, individuals with other types of jobs also risk occupational exposure to bloodborne infection. We report the case of a policeman in whom both HIV and hepatitis C virus (HCV) seroconversion were clearly documented after he was involved in a bloody fight while making an arrest.

A 52-year-old policeman (patient A) presented with a positive HIV result on EIA. Ten weeks previously, he had developed an acute mononucleosis-like syndrome. Acute HIV-1 infection was confirmed by means of gradual Western blot positivity. His CD4+ lymphocyte count was $399 \times 10^3$ cells/L, and his plasma level of HIV type 1 (HIV-1) RNA was 503,200 copies/mL. Alanine aminotransferase activity was slightly elevated. No antibodies to HCV were detected, and the patient was immune to hepatitis B virus (HBV). Three weeks later, HCV seroconversion was diagnosed (by means of EIA, recombinant immunoblot assay, and plasma HCV RNA positivity). The patient’s sex partner was seronegative for both viruses, and the patient denied having had another sex partner during the previous 6 months. He had never received blood transfusions and had never been an injection drug user. However, he disclosed that, 3 weeks before the onset of his illness, he had punched a man in the teeth while making an arrest. Although he had noticed 2 wounds on his hand, which was covered with blood, he did not wash his hand immediately after the incident. Within a few days after the arrest, he developed lymphangitis that a few days after the arrest, he developed lymphangitis that...