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PML-IRIS in A Patient with HIV Infection: A Case Report

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Virus, Acquired Immune Deficiency Syndrome, Central nervous system, Immune system, HIV.

Introduction
Acquired Immune Deficiency Syndrome with patients are often affected by a number of neurological disorders. This condition due to the direct effect of the HIV virus in the central nervous system, the immune system's response to the virus or the predisposition of the central nervous system to infection by many opportunistic pathogens. With the increase in antiretroviral therapies against human ımmunodeficiency virus , a new health problem called immune reconstitution inflammatory syndrome (IRIS) has emerged, affecting an increasing number of patients [1-3]. Immune reconstitution inflammatory syndrome (IRIS) is paradoxical deterioration of a pre-existing illness following abrupt improvement in an individual's immune function [4,5]. This case report describes progressive multifocal leukoencephalopathy immune reconstitution inflammatory syndrome(PML-IRIS) in a patient with HIV infection.

Case Presentation
A 51-year-old man was admitted for new focal seizure, lisp and left lower extremity weakness. Physical examination findings were remerkable left lower and upper weakness, imbalance and left extremities hypoesthesia. Magnetic resonance (MR) imaging of the brain and analysis of cerebrospinal fluid (CSF) was performed. Initial analysis of cerebrospinal fluid(CSF) revealed the plasma HIV RNA level was 332 000 copies per milliter, the CD4 +T cell count was 109 cells per microliter (normal range, 500-1800 cells per microliter) and existing human polyomavirus 2-JC virus(+). Two months after presentation, the patient presented with increasing and persistent left lower extremity weakness and numbness. Highly active antiretroviral therapy (HAART) was started during this second hospitalization. While undergoing this treatment, the CD4+ T-cell count increased to 235 cells per microliter, and plasma HIV RNA level was 220 copies per milliter. During this admission, corticosteroid therapy was started.

Imaging Findings
Initial MR imaging of the brain revealed abnormal T2 hyperintensity and no contrast enhancement in the the right frontal lobe is in the precentral gyrus, the left frontal lobe, the both thalamus. In the MRI spectroscopy examination, an increase in the Cho peak, a decrease in the NAA peak, and an increase in the lipid/lactate peak were observed in the right perirolandic lesion. In MRI perfusion examination, rCBV and rCBF signal were decreased in lesions on both sides (Figure 1). Two months later, MR imaging revealed an increase in T2 hyperintensity in the right precentral gyrus and both thalamus (Figure 2). The findings were concluded as lesions consistent with progressive PML in both cerebral hemispheres at follow-up.

Discussion
Progressive multifocal leukoencephalopathy (PML) is a demyelinating disease which results from the reactivation of John Cunningham virus (JC virus) infecting oligodendrocytes in patients with compromised immune systems. PML releated neuro-Immune Reconstitution Inflammatory Syndrome is an emerging central nervous system inflammatory disorder that arises during anti-retroviral therapy-induced immune renovation of Human Immunodeficiency Virus -infected patients. Neuro-IRIS is compatible with a irregulated host immune response provoked by either pathogen-derived antigens or auto-antigens that lead to unproportional tissue damage. IRIS is a paradoxical clinical deterioration that occurs because of the restoration of the capacity to mount an inflammatory immune response after treatment with antiretroviral drugs. The keys to this diagnosis are the symptomatic and radiologic progressions of disease after the initiation of HAART, despite an increasing CD4 T-cell count

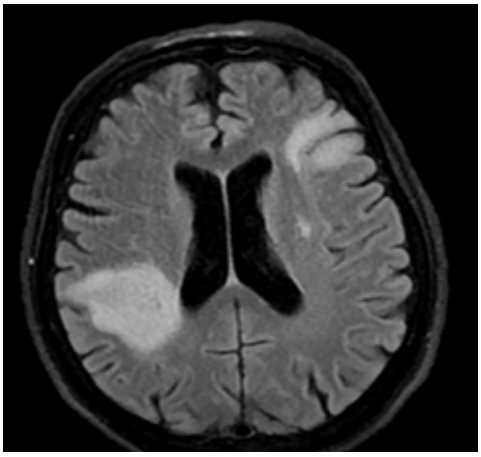


Figure 1-A

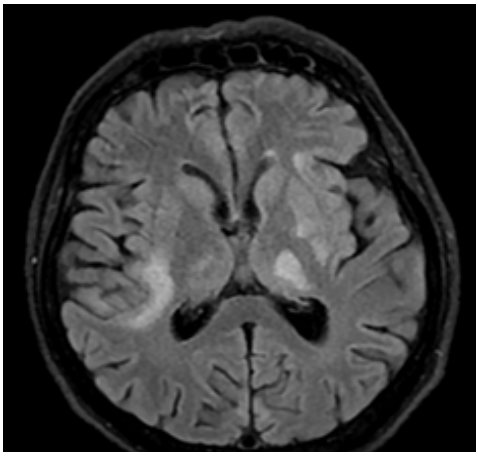


Figure 1-B

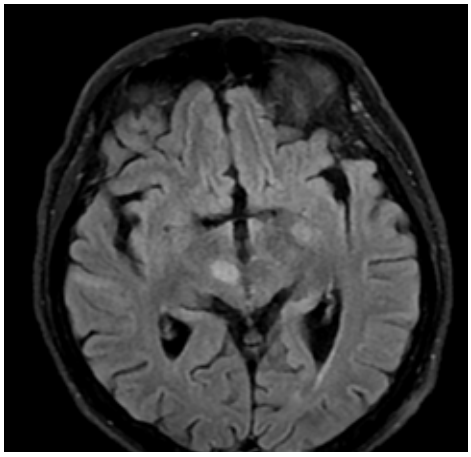


Figure 1-C

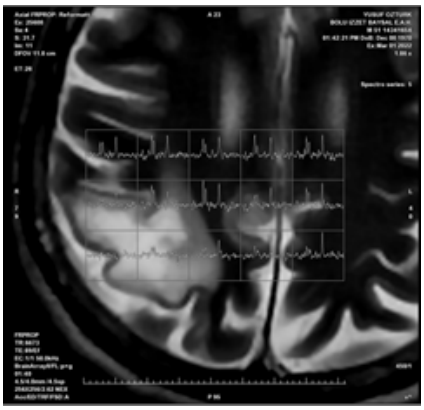


Figure 1-D

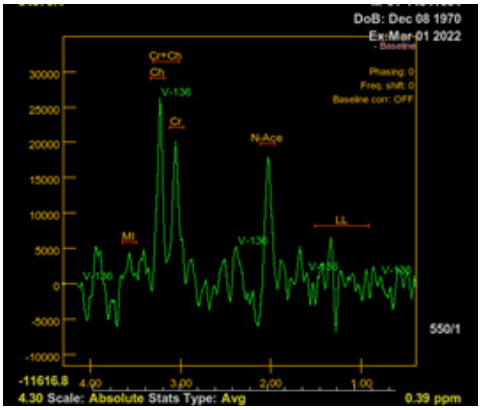
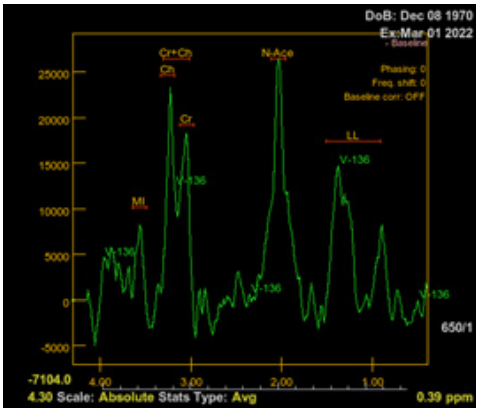


Figure 1-E



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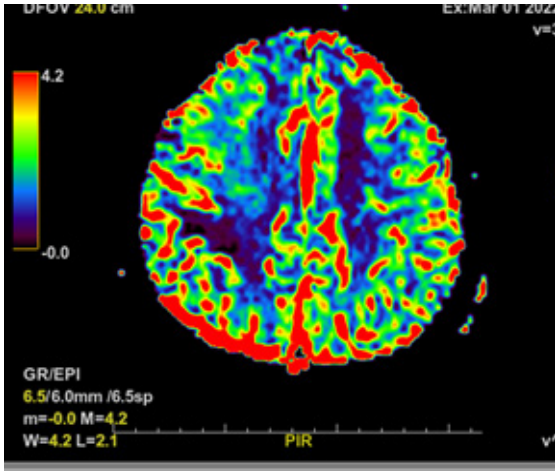

Figure 1-G

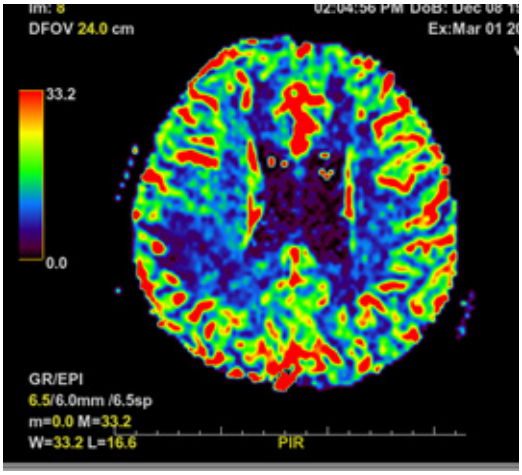

Figure 1-H

Figure 1: MR images obtained at initial presentation. Axial fluid-attenuated inversion recovery (FLAIR) images show abnormal hyperintense signal (arrows) in the the right frontal lobe is in the precentral gyrus, the left frontal lobe, the both thalamus (Figure 1-A,B,C). In the MRI spectroscopy examination, an increase in the Cho peak, a decrease in the NAA peak, and an increase in the lipid/lactate peak were observed in the right perirolandic lesion (Figure 1-D,E,F). In MRI perfusion examination, rCBV and rCBF signal were decreased in lesions on both sides in the right perirolandic lesion (Figure 1- G,H).

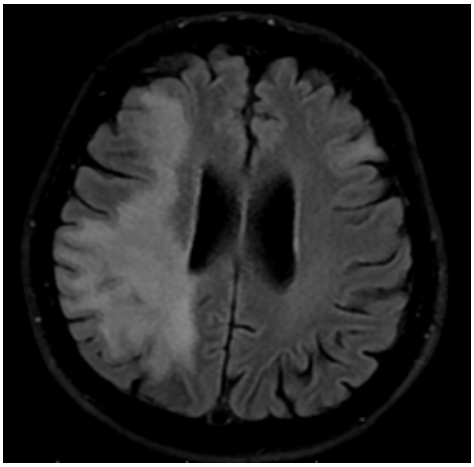

Figure 2-A

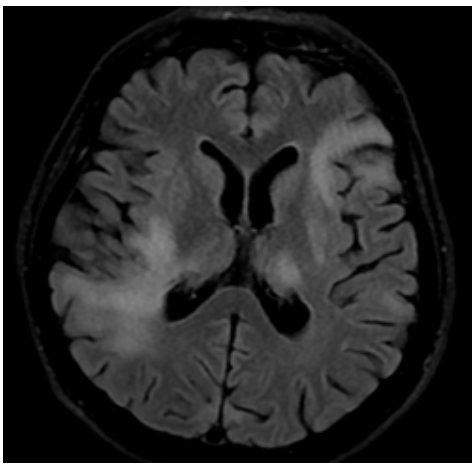

Figure 2-B

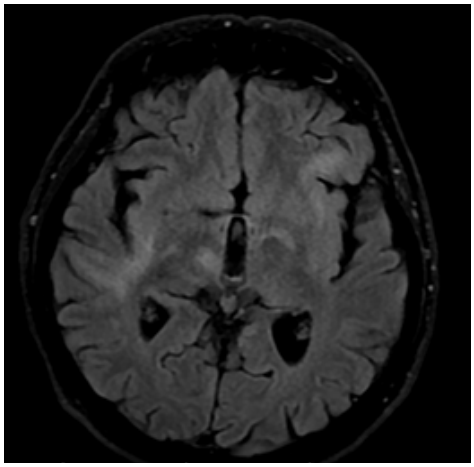

Figure 2-C

Figure 2: Axial fluid-attenuated inversion recovery (FLAIR) images show an increase in T2 hyperintensity and in the right precentral gyrus and both thalamus (Figure 2-A,B,C).

and the suppression of HIV viremia, and the absence of a new opportunistic infection. Increase in CD4 count and improved viral load can mount IRIS response in PML patients and IV Steroid therapy should be instituted without delay [6]. MR imaging typically reveals multiple nonenhancing white matter lesions that may coalesce and have a predilection for the occipital and parietal lobes; one-third of patients also have cerebellar involvement [4].

Paradoxically, gray-white matter lesions may occur or existing lesions may enlarge during HIV treatment. In patients whose immunosuppressive therapy is reduced or discontinued, paradoxically worsening of the clinical condition of the patients may be observed after an increased local or systemic inflammatory response during the recovery of the natural and acquired immune system. These findings may appear in various situations.

In conclusion, many possibilities, including drug resistance, inadequate anti-HIV therapy, side effects of treatment, and secondary infections, should be reviewed in the differential diagnosis of cases with IRIS, and it should not be forgotten that IRIS is a diagnosis of exclusion.

Consent statement

Written informed consent was obtained from the patient for publication of this Case report and any accompanying images.

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