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A case of pandemic 2009 influenza A (H1N1) in a patient with HIV infection

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Abstract

Little is known about pandemic 2009 influenza A (H1N1) among patients with human immunodeficiency virus (HIV) infection. We report a case of 2009 influenza A (H1N1) in a patient who was newly diagnosed as having HIV. His general condition was well and was successfully treated at outpatient setting. Literatures were reviewed for the diagnosis, treatment, prevention and infection control about pandemic 2009 influenza A (H1N1) among those who have HIV infection.

Key Words:pandemic 2009 influenza A (H1N1), human immunodeficiency virus (HIV), oseltamivir

Although HIV infection is presumed to be at higher risk for complications related to 2009 influenza A (H1N1) (1,2), little is known about association between these two. We report a case of 2009 influenza A (H1N1) in a patient who was newly diagnosed as having HIV.

24-year old man with past medical history of hepatitis C virus (HCV) infection and neurosyphilis was referred to our hospital as his HIV test turned positive. He was diagnosed as neurosyphilis in 2007 and diagnosed to have HCV infection in 2008. He went through 48 weeks of interferon and ribavirin therapy and is on sustained viral response (SVR). He had tattoos at age of 16 and is a man having sex with men (MSM). He voluntarily tested for HIV in 2006 and it was negative, but it turned positive when he tested again in 2009. He was referred to our hospital for further management of HIV infection.

He visited our hospital on November 16, 2009. Incidentally, he had been febrile with sore throat since one day prior to the presentation. He lives with his mother and an elder sister, and the mother had had low grade fever and sore throat 3 days prior to the presentation. She became asymptomatic without treatment.

He denied any cough, sputum, shortness of breath, chill, rigor, and mental status change. He also denied any abdominal symptoms.

On physical examination, he was a well developed gentleman without distress. The blood pressure was 120/80mmHg, pulse rate was 100/minute,

respiratory rate was 18/minute, axillary temperature was 38.3C°, and oxygen saturation was 98% on room air. His head, eye, ear, nose, throat, and neck examinations were entirely normal. Lung sounds were clear and his heart sound was regular without murmur. Abdomen was soft and there was no tender. Except for small lymph nodes on bilateral inguinal area, there was no lymphadenopathy. There was no skin lesion but he had tattoos on both shoulders and on the right lower extremity.

Rapid influenza test was not done and polymerase chain reaction (PCR) test for influenza virus was sent, to confirm the disgnosis.

Because of concern about nosocomial outbreak, he was not sent to the laboratory for blood and radiographic work up on the day. He was sent home with prescription of oseltamivir 75mg twice a day for 5 days, and was instructed to stay home until recovery.

On the following day, PCR turned out positive for pandemic 2009 influenza A (H1N1). On the same day, telephone consultation was done. He reported his symptoms had improved and body temperature in the morning was 37.4C°. On November 26 (17th day after the onset), he returned to our clinic with complete recovery from the illness. On the day, laboratory tests were performed. White blood cell count was 5,300/mm^3, with 58% neutrophils, and 31% lymphocytes. Hemoglobin level was 14.5 g/dL, and platelet count was 173,000/mm^3. CD4+ cell count was 287/mm^3 (17.4%). Real time PCR for HIV RNA was 4.7 x 10 ^{3}/mL. HCV antibody was positive but

PCR for HCV RNA was undetectable. Serum electrolytes, liver and kidney function tests were all normal. HIV antibody was positive both for enzyme-linked immunosorbent assay (ELISA) and western blot (WB) for HIV-1. He is scheduled to start highly active antiretroviral therapy (HAART).

As far as we are aware, this is the first case report of pandemic 2009 influenza A (H1N1) case with HIV infection in Japan. As of this writing (January 8, 2010), Japan's Ministry of Health, Labour and Welfare (MHLW) reported 145 cases of fatal cases of 2009 influenza A (H1N1) in Japan but HIV infection was not among underlying conditions of the patients (3). Also, MHLW reported more than 10,000 hospitalized patients with H1N1 virus infection. Among those, there were 227 immunosuppressed patients either by underlying conditions or medications but their details were not disclosed (4).

HIV infection may be related to worse prognosis of influenza. Among 168 critically ill patients with 2009 influenza A (H1N1) infection in Canada, 2 (1.2%) had HIV infection (5). Among 1088 cases of hospitalized or fatal cases in California, the United States, 22 (2%) patients had HIV infection and 4 of them died. Fatality (4/22, or 18%) appeared higher than the rest (114/1066, or 11%) but it was not statistically significant ($p=0.31$, Fisher's exact test, our calculation) (6). In South Africa, where HIV infection is highly endemic, there were 12,331 cases of laboratory-confirmed 2009 influenza A (H1N1)

and 91 deaths. Most common underlying condition among fatal cases was HIV infection (17/32 tested, or 53%). followed by pregnancy (28%), and obesity (22%) (7).

Cases were reported regarding seasonal influenza among HIV infected patients (8-11). Clinical characteristics of influenza appear similar to those without HIV infection with comparable prognosis.

There is little data regarding the treatment of influenza among those who have HIV infection, although early use of antiviral medications such as oseltamivir and zanamivir is recommended (2). Our patient also received oseltamivir with success.

For mild illness, we believe that hospitalization of patients with underlying illness is not necessarily mandated, as in this case, granted the patients were closely monitored. Telephone consultation may be useful in this situation.

We used PCR for the confirmatory diagnosis. Rapid influenza antigen test must be used with caution because of its relatively low sensitivity (11-14). History taking for underlying conditions and detailed physical examination for severity are important in the management of patients with influenza, in addition to these diagnostic tests.

To avoid nosocomial spread of influenza, we deliberately avoided blood and imaging studies on the first visit. We judged that this could be done afterwards and the risk and benefit of these studies were taken into

consideration.

His low CD4+ cell counts were somewhat unusual since HIV infection likely occurred after 2006. This may be due to either rapid progression of HIV infection, which is known to occur sometimes (22), false negative ELISA test in 2006, and influence of influenza infection on CD4+ cell counts. The last hypothesis is never observed in the past and worth the consideration. As of this writing, the follow up test of CD4+ cell counts is not yet performed in this patient.

In conclusion, we report the first case of pandemic 2009 influenza A (H1N1) in a patient with HIV infection in Japan. Further studies are needed to better understand the infection among this population.

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