JIDC | THE JOURNAL OF INFECTION IN DEVELOPING COUNTRIES

*Letter to the Editor*

# First HIV-2 infection in a child in Turkey

Eda Kepenekli Kadayifci[1], Ayşe Karaaslan[1], Kenan Midilli[2], Ahmet Soysal[1], Mustafa Bakır[1]

*[1] Department of Pediatrics, Division of Pediatric Infectious Diseases, Marmara University School of Medicine, Istanbul, Turkey*
*[2] Department of Microbiology, Cerrahpaşa School of Medicine, Istanbul University, Istanbul, Turkey*

**Key words:** HIV-2; AIDS; children, Turkey.

*J Infect Dev Ctries* 2016; 10(9):1042-1044. doi:10.3855/jidc.7854

(Received 25 October 2015 – Accepted 03 June 2016)



Dear Editor,

Human immunodeficiency virus (HIV) infection has become an important cause of secondary immunodeficiency syndromes and opportunistic infections since its discovery in 1985. Human immunodeficiency virus type 1 (HIV-1) infection is a major cause of the AIDS pandemic while HIV type 2 (HIV-2) is the leading cause of disease in some regions of the world [1,2]. This is important when considering the diagnosis of HIV-2 infection, which has different important features compared to HIV-1. In Turkey, no pediatric HIV-2 case has been reported to date.

Herein, we present the case of a girl of 10 years of age with HIV-2 infection due to maternal transmission. Her father was a sailor in a commercial shipping company working for West African countries. She had been treated based on a HIV-1/AIDS diagnosis before referral to our hospital. During the follow up, her CD-4(+)-T lymphocyte count decreased despite appropriate anti-retroviral treatment initiated according to molecular drug-resistance test results. Interestingly, her CD-4(+)-T lymphocyte count had increased when her mother died. Her legal guardians warned the health-care workers about the fact that the mother was never compliant with her daughter's treatment and forced her daughter to say she took her medicine as suggested.

Poor adherence to therapy should always be kept in mind in patients with decreasing lymphocyte count despite appropriate drug therapy. Diagnosis of HIV-2 infection is considerably more difficult than HIV-1 infection because of technical insufficiencies all over the World, as well as in Turkey.

HIV-2 was first described in West Africa but after a while spread to other regions of Africa, Europe, India, and America [1]. The increase of migration from countries where HIV-2 is endemic to industrialized countries has facilitated the spread of the virus.

In Turkey, the first patient with AIDS was diagnosed in 1985. According to official health records in Turkey there have been 7,041 HIV (+) people and 1,197 patients with AIDS diagnosis between 1985 and 2015, [3]. But, no pediatric HIV-2 case was reported to date.

Compared to HIV-1 infection, the clinical course of HIV-2 infection is generally characterized by a longer asymptomatic stage, lower plasma HIV-2 RNA levels, and lower mortality; however, progression to AIDS does occur [1,4].

## Case

The girl was admitted for the first time to another hospital at the age of two with multiple molluscum contagiosum lesions on perineal region. Lymphocyte subset analysis was done with the presumed diagnosis of primary immunodeficiency. HIV infection was suspected when her CD4(+)-T-cell count was found to be low. Her Anti-HIV 1/2 serology was positive, but Western-Blot immunoblotting and HIV-1 PCR were negative. The HIV-2 PCR was not available in those years in Turkey. The physicians strongly suspected a HIV infection because of the low CD-4(+)-T lymphocytes count and positivity of anti-HIV serology. As a result of the child's diagnosis, her mother was screened and her HIV serology also tested positive. In the patient history, it was learned that her father died because of pneumonia.

Lamivudin, stavudin and lopinavir/ritonavir combination (2 nucleoside reverse transcriptase

inhibitors and 1 boosted-protease inhibitor) therapy was started when she was two-years old. She was transferred to our hospital at six years of age, because of parental incompliance to follow-up and the family was living in a district closer to our hospital. Her therapy was changed to lamivudin, zidovudin and darunavir/ritonavir combination because of her severe gastrointestinal disturbances with the previous HAART regimen. Her HIV-1 PCR was negative in our hospital but HIV-2 PCR analysis performed in a reference laboratory was positive. Intravenous immunoglobulin was also given in 3-week intervals because of recurrent pneumonia attacks. Interestingly, during the HAART therapy, her CD-4(+)-T lymphocyte count decreased slowly (Table 1); moreover, anti-retroviral drug resistance was not detected in her blood samples and in the mother's blood samples by PCR.

The mother refused her own anti-retroviral therapy because of severe gastrointestinal disturbances and psychiatric problems, and she died because of pneumonia in 2014. When she died, the other family members noticed that the mother had never given anti-retroviral drugs to her daughter and she forced her daughter to say to health-care workers that she was always compliant with her therapy. Detailed information about the daughter's diagnosis and her anti-retroviral therapy was given to her legal guardians. The new guardians have been very compliant with her therapy during the past 2 years of follow-up. The patient is 12-years-old now. Her CD-4(+)-T-cell count is increasing day by day (Table 1) and her mood has also improved.

## Discussion

Human immunodeficiency virus type-2 infection should be considered in high-risk individuals (immigrants from high-risk areas, sexual partners of HIV-2 positive individuals) presenting with AIDS-like clinical symptoms or in people whose unusual western blot results exhibit [1,2]. Today, quantitative HIV-2 RNA assays are not commercially available in the majority of countries, including the US [1]. For this reason, patients are generally monitored by CD-4(+)T-cell counts measurement instead of HIV-2 PCR. Other important features of HIV-2 infection are: its lower transmission potential, its milder clinical symptoms compared with HIV-1 infection, its natural resistance to NNRTI drugs and to enfuvirtide [4-7]. Commonly used serological assays (enzyme-linked immunosorbent and chemiluminescent immunoassays) detect both HIV-1 and HIV-2 without differentiation between the 2 types of virus.

In our case, AIDS diagnosis was considered because of the patient's clinical features, low CD-4(+)-T-lymphocyte counts and positive anti-HIV1/HIV2 serology results. However, the negative result of HIV-1 PCR made the diagnosis suspicious. Detection of HIV-2 by PCR revealed the accuracy of treatment.

Anti-retroviral drug resistance was considered because of decreased CD-4(+)-T lymphocyte counts and recurrent pneumonia attacks despite HAART therapy. Resistance genes were not detected by molecular methods. The exact reason for poor response to therapy was found as poor adherence to medical therapy following admissions of the patient's relatives after her mother died.

## Conclusion

Human immunodeficiency virus type-2 infection should be considered in patients who have epidemiological risk factors and AIDS-like clinical symptoms or in patients whose unusual western blot results exhibit and HIV-1 PCR were negative. Natural resistance of HIV-2 to NNRTI drugs and enfuvirtide should be considered before the initiation of HAART therapy. Poor adherence to therapy should always be kept in mind in patients with decreasing lymphocyte counts despite appropriate drug therapy. Diagnosis of HIV-2 infection is considerably more difficult than

**Table 1.** Total White Blood Cell and CD-4(+)-T lymphocyte count of the child with the HIV-2/AIDS diagnosis. The columns in bold show the test results after initiation of regular HAART therapy.

| | **July 2009** | **Aug 2009** | **Dec 2010** | **Nov 2011** | **Jan 2012** | **Sep 2012** | **Nov 2013** | **Sep 2014** | **Jan 2015** | **Sep 2015** | **Jan 2016** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *WBC* | 16800 | 13500 | 6600 | 9400 | 5400 | 4900 | 4100 | 3000 | **4200** | **3800** | **5300** |
| *ALC* | 8780 | 5620 | 3850 | 4600 | 3400 | 2900 | 2000 | 1400 | **1800** | **2400** | **2700** |
| *CD4 %* | 12 | 9 | 16 | 6 | 7 | 4 | 2 | 2.5 | **12** | **18** | **19** |
| *CD4 count* | 1053 | 506 | 616 | 276 | 238 | 116 | 40 | 35 | **216** | **432** | **540** |
| *HIV-2 PCR* | Positive | | | | | | | | | **Negative** | |

diagnosis of HIV-1 infection because of technical insufficiencies all over the world, as well as in Turkey.

## References

1. Campbell-Yesufu OT, Gandhi RT (2011) Update on human immunodeficiency virus (HIV)-2 infection. Clin Infect Dis 52: 780.
2. American Academy of Pediatrics (2012) Human Immun Deficiency Virus Infection. In: Pickering LK, Baker CJ, Kimberlin DW, Long SS, eds. Red Book 2012 Report of the Committee on Infectious Diseases. Elk Grove Village, 418-439
3. Tümer A (2015) HIV/AIDS Epidemiyolojisi Ve Korunma. Available: http://www.hatam.hacettepe.edu.tr/Epid_web_A.T_2015.pdf . Accessed 30 march 2016
4. Kanki PJ, Travers KU, MBoup S, Hsieh CC, Marlink RG, Gueye-NDiaye A, Siby T, Thior I, Hernandez-Avila M, Sankalé JL (1994) Slower heterosexual spread of HIV-2 than HIV-1. Lancet 343: 943-946.
5. MacNeil A, Sarr A, Sankale J, Meloni S, Mboup S, Kanki P (2007) Direct evidence of lower viral replication rates in vivo in Human Immunodeficiency Virus type 2 (HIV-2) infection than in HIV-1 infection. J Virol 81: 5325–5330
6. Berry N, Jaffar S, Schim van der Loeff M, Ariyoshi K, Harding E, N'Gom PT, Dias F, Wilkins A, Ricard D, Aaby P, Tedder R, Whittle H. (2002) Low level viremia and high CD4% predict normal survival in a cohort of HIV Type-2-infected villagers. AIDS Res and Human Retroviruses 18: 1167–1173.
7. Witvrouw M, Pannecouque C, Switzer WM, Folks TM, De Clercq E, Heneine W (2004) Susceptibility of HIV-2, SIV and SHIV to various anti-HIV-1 compounds: implications for treatment and postexposure prophylaxis. Antivir Ther 9: 57–65.

## Corresponding author

Ahmet Soysal
Marmara University Pendik Training and Research Hospital, Department of Pediatrics
Mimar Sinan Cad. No:41, Ust Kaynarca, Pendik, Istanbul, Turkey
Mobile: + 00905324483571
Fax:+ 00902166254725
Email: asoysal@marmara.edu.tr

**Conflict of interests:** No conflict of interests is declared.