

EDUCATIONAL CASE REPORT

Human immunodeficiency virus infection with multiple opportunistic infections: lessons learnt from a non-adherent patient

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Abstract

We report a case of advanced human immunodeficiency virus (HIV) infection with multiple opportunistic infections (*Pneumocystis carinii* pneumonia, cryptosporidiosis, oesophageal candidiasis and cytomegalovirus infection). The patient was presumed to be adherent on antiretroviral therapy (ART) and was initiated on respective treatments for the opportunistic infections but continued to deteriorate. On further reviewing, he was found to be poorly adherent to ART and was advised enhanced adherence counselling after which his condition improved. We report this case to emphasize the importance of adherence to ART medications in the management of patients with HIV.

INTRODUCTION

Patients with advanced human immunodeficiency virus (HIV) infection have high morbidity and mortality owing to increased susceptibility to opportunistic infections. Early diagnosis and initiation of antiretroviral therapy (ART) is the cornerstone of management in patients with advanced HIV. Although a lot of stress is laid on the initiation of therapy, monitoring of compliance and importance of adherence in management is often neglected. We present a case of advanced HIV with multiple opportunistic infections to emphasize that adherence to ART is the most effective tool in managing patients with advanced HIV, and poor treatment adherence is associated with adverse outcomes.

CASE REPORT

A 50-year-old gentleman who worked in the para-military forces presented to a secondary care hospital with intermittent high-grade fever associated with loss of appetite and weight

(around 10 kg) for a year. He was found to be positive for HIV-1 infection and was advised ART. He did not initiate ART and presented 2 months later to us with fever, shortness of breath and loose stools for 15 days. He was found to have a CD4 count of 62/mcl. A chest X-ray and computed tomography of the chest was done for these complaints, which was suggestive of *Pneumocystis carinii* pneumonia. He was managed in the intensive care unit with intravenous trimethoprim-sulfamethoxazole and steroids. After 2 days of initiation of treatment, he developed erythema over forearm, neck, chest and extremities. This was accompanied by oral mucosal involvement and punctate keratopathy. He was diagnosed as Steven Johnson syndrome-toxic epidermo-necrolysis overlap secondary to trimethoprim-sulfamethoxazole, which was immediately stopped, and he was put on steroids. His lesions resolved in next 2 weeks and he was started on tenofovir-disoproxil fumarate, lamivudine and efavirenz along with dapsone prophylaxis. ART was not started earlier as both tenofovir and efavirenz could have worsened the skin condition. He was discharged in a stable condition. He reported proper compliance in all his out-patient visits.

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Eighteen months into the illness, he started to have dysphagia and small bowel type of diarrhoea (15–20 times/day, non-bloody, not associated with abdominal pain and tenesmus) for which he was admitted. On upper gastrointestinal (UGI) endoscopy, he was found to have oesophageal candidiasis and was started on fluconazole. Stool microscopy revealed *Cryptosporidium* oocysts, and he was initiated on nitazoxanide. However, he continued to have diarrhoea with multiple stool samples detecting *Cryptosporidium* oocysts and had persistent dyselectrolytemia for which oral supplementation was given. He continued to deteriorate and was found to have features of dehydration, severe wasting, candidiasis (oral) and diffuse ichthyosis on examination. Dosage of nitazoxanide was increased, and azithromycin was added once daily for cryptosporidiosis to which he responded partially.

His CD4 count was zero, and viral load was high. His previous CD4 counts done at six-monthly intervals after the baseline count of CD4 of 62/mcl were 104/mcl and 76/mcl. With suspicion of failure, he was started on zidovudine, lamivudine and atazanavir/ritonavir. Single-tablet regimen with a protease inhibitor (PI) or integrase inhibitor was not available under the national scheme for use in this patient. HIV resistance genotyping did not detect any resistance to any of the tested drugs. On reviewing the history, he reported decreased adherence to the ART medications as he avoided taking his medications in front of his co-workers on outstation postings. He also seemed to be extremely worried about his ill health. He was counselled about the severity of his condition and the importance of adherence. He was referred to a trained psychologist for evaluation. He was found to be depressed and was started on anti-depressant by the psychiatrist. He was continued on a PI-based therapy, owing to its higher barrier to resistance, considering his history of non-compliance.

He continued to have persistent diarrhoea along with dysphagia not responding to fluconazole. Cytomegalovirus (CMV) esophagitis was suspected in addition to candidiasis based on raised CMV viral load and UGI endoscopy findings. He was started on valganciclovir after which his CMV viral load became negative. His diarrhoea and dysphagia eventually improved and was discharged on PI-based ART, dapsone prophylaxis and fluconazole. He was also registered for regular follow-up with the psychologist and psychiatrist.

DISCUSSION

Cryptosporidiosis is commonly seen in patients with advanced HIV with an overall prevalence of 8.7%. These patients present with a diarrheal illness which may last for months resulting in weight loss, malnutrition and extended hospitalization [1]. Although nitazoxanide is approved for the treatment of cryptosporidiosis, it is often ineffective. Other agents like azithromycin and PIs have been tried with minimal success. Effective ART is probably the most effective tool in managing patients with cryptosporidiosis [2].

CMV infection is associated with rapid HIV disease progression and consequently, more acquired immune deficiency syndrome related events. ART is not only effective in controlling HIV replication but also decreases CMV-related adverse events by the restoration of CMV-specific immunity [3]. CMV-related gastrointestinal disease is seen in HIV-infected patients with advanced immunosuppression. Oesophagus and colon are the most important sites that are affected [4]. Ganciclovir/valganciclovir, along with the initiation of effective ART, is the treatment of choice.

India has a total of >2 million HIV-positive individuals [5]. Most of these patients are managed in ART centres linked to the national programme. The national programme was initiated in 1992, and it has been giving free ART to all HIV registered HIV patients since 2004 [5]. The programme continues to give free ART to all the registered patients despite the decrease in its funding. The national programme has tried to keep up with the recommendations on the treatment given by the World Health Organisation. Since 2013, the first-line treatment has been a single-tablet regimen of tenofovir, lamivudine and efavirenz [5]. For those who fail the first-line treatment, they are shifted to a two-pill regimen containing atazanavir/ritonavir. While the programme works fairly well for most patients, in this patient, there were certain challenges. At the time, the patient presented routine viral load monitoring was not available for all patients at the centre. It was done only for those patients where immunological failure was suspected. Despite access to free ART, the number of centres that dispense medications is limited, leading to high patient turn over in each centre. Due to the high patient turn, the time spent with each patient is suboptimal, leading to a poor patient–physician relationship. Also, adherence is measured by pill counting method and therefore, it is easy to miss non-compliance. Single-tablet regimen with dolutegravir has been recently introduced in the national scheme, but it was not available at the time, the patient was being managed.

Variable drug adherence was noted (47–90%) in the studies from Indian centres [6]. The problem of drug adherence is further compounded by high pill burden, poor health literacy and treatment-related side effects in patients with HIV [7]. Poor treatment adherence to ART is associated with inadequate viral suppression, increased resistance and increased opportunistic infections [7–9]. It is essential to spend time with the patient and understand his/her problems during the initiation of ART. Patients are often scared of revealing their medical condition to their employers for fear of being judged and losing their job. It is also essential to empowering the patient about their rights [8,9]. Poor treatment adherence to ART, due to various socio-economic factors, is often missed by healthcare staffs [10]. It is imperative to consider the social aspects like living conditions, economic support, working conditions and family support.

Potential solutions to improve adherence include better education and motivation of patients, early referral for diagnosis and treatment, home visits, an increase in human resources and, creating social support groups. Patient education programmes are essential not only in the hospital but also in the communities near patients' residence. This would help to dispel the misconceptions and stigma associated with HIV infection. Adherence counselling, although a time-consuming process is an advantageous intervention in terms of overall patient outcome.

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CONFLICT OF INTEREST STATEMENT

None declared.

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ETHICAL APPROVAL

Not applicable.

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Guarantor—same as the corresponding author.

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