

A Good Therapeutic Strategy to Unrecognized HIV Infection in A Patient with Multiple Myeloma Undergoing Peripheral Blood Stem Cell Transplantation - Case Report

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Abstract Multiple myeloma is a hematological malignancy associated with increased plasma cell proliferation in the patient's bone marrow. HIV infection is an immunodeficiency disease that is present in some malignancies, such as non-Hodgkin's lymphomas, as an effective factor in the progression of malignancy. Our patient was diagnosed with multiple myeloma and after bone marrow transplantation, it became clear that the patient was HIV positive and also, he had a mild toxoplasmosis infection. After diagnosis, the patient was treated with antiviral drugs and drugs for the treatment of toxoplasma infection. After several months and carrying out the relevant tests, it indicates the control of HIV viral infection, and the patient is still being treated and followed up. Nonetheless, our case features the significance of HIV testing in early malignancy.

Keywords: multiple myeloma, malignancy, non-Hodgkin, lymphoma, transplantation, toxoplasmosis

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1. Introduction

Multiple myeloma is a malignancy of blood cells, which in its most important characteristic is the excessive proliferation of plasma cells [1]. The disease was first recognized by Samuel Sullen in 1844 [2]. Multiple myeloma represents 1% of all malignancies and 10-15% of hematological malignancies [3]. It occurs more often in adults, and the highest incidence of disease is Seventh decade [4,5]. When diagnosing this malignancy, several clinical and laboratory features are useful, including:

1. More than 10% of plasma cells are found in bone marrow.
2. Organ involvement, including cases of hypercalcemia and renal failure and bone lytic lesion
3. The presence of M protein in the patient's serum [6].

In HIV-infected patients, the most common hematologic malignancy is lymphoma. In spite of the fact that MM is uncommon in these patients, they have a higher risk than the all-inclusive community [7].

We report a patient with multiple myeloma which had negative results from viral tests required before the

transplant but after transplantation, he was referred to the hospital with a mild infection. By examining the viral tests, he was diagnosed HIV positive.

2. Case Presentation

A 43-year-old man referred to the Clinic of Hematology and oncology, Kermanshah, Iran in April 2016, and no clinical history was observed in the patient's medical records. The patient had symptoms such as bone pain, weakness and headache.

Initial investigations revealed normocytic, normochromic anemia with hemoglobin (Hb):8.4g/ dL, white blood count (WBC):1600/ μ L, platelet (Plt): 110 x 10³/ μ L. The result of the serum protein electrophoresis showed an increase in most protein bands is seen (see Table 1 for detailed analysis), especially in gamma band (Figure 1). Also, in his peripheral blood smear (PBS), anemia was observed rouleaux formation. The bone marrow aspiration (BMA) and bone marrow biopsy (BMB) were performed and it showed an increased percentage of plasma cells (12%) in bone marrow (Figure 2).

Table 1. Serum protein electrophoresis

Fractions	Percentage	Ref.%
Albumin	32.7	55.8-66.1
Alpha1	7.6	2.9-4.9
Alpha2	13.1	7.1-11.8
Beta1	6.3	4.7-7.2
Beta2	9.9	3.2-6.5
Gamma	30.4	11.1-18.8

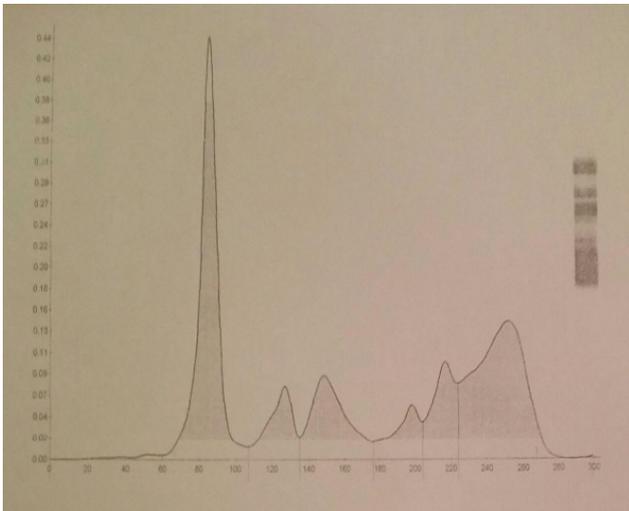


Figure 1. Increase in most protein bands is seen, especially in gamma band

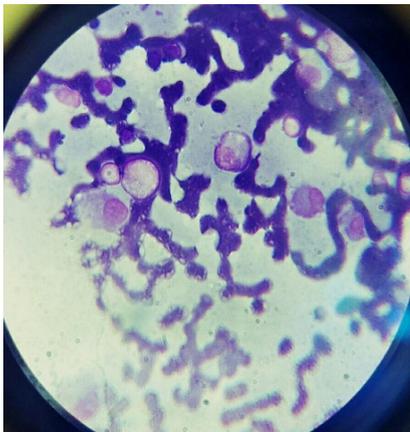


Figure 2. Photomicrograph of bone marrow aspiration showing plasma cell

Therefore, by interpreting the above results, his disease was diagnosed the multiple myeloma. Then, the patient was treated with chemotherapy drugs such as thalidomide 100 mg per day, dexamethasone 200 (Td) and bortezomib (velcade) 1.3 mg/day, cyclophosphamide 100 mg/day, and dexamethasone 200 mg/day (VCd), and Zometa (zoledronic acid) 400 mg/day. After 5 cycles of therapy with these drugs, the results of the complete blood count (CBC) were as follows:

WBC: $2.2 \times 10^3/\mu\text{L}$, Hb: 10.6 g/dL and Plt: $180 \times 10^3/\text{ML}$.

These results indicate a relative improvement of the patient's condition and the readiness for autologous stem cell transplantation (ASCT). Then the patient was admitted to Imam Reza Hospital transplantation center in Kermanshah. Blood was tested for HIV-1 and 2 and for HBs Ag and Anti-HCV. The results of these tests before transplantation were completely negative, so the patient was transplanted.

The response to the treatment was complete and the plasma cell level was below 5%. The serum protein electrophoresis was normal (Figure 3 & Table 2). After 70 days of a successful transplant, the patient referred to the hospital for signs of weakness, anorexia, dry cough, and fever and chills. The results of the laboratory parameters revealed WBC: $0.2 \times 10^3/\mu\text{L}$ (lymphocyte: 15%), Hb: 6.6 g/dL, Plt: $29 \times 10^3/\mu\text{L}$ and ESR: 30 mm in 1st hr. Also, Serologic tests revealed a mild toxoplasma infection. By performing virus tests, unexpectedly the patient was diagnosed as HIV-positive with a viral load of $>71,000$ copies per ml. Also, absolute lymphocyte count (ALC) was 30 cells/ μL and CD4 Lymphocyte Percentage was 3%.

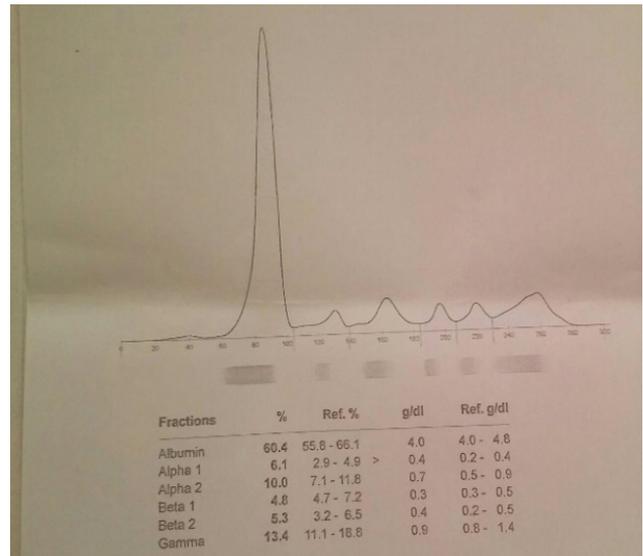


Figure 3. Serum protein electrophoresis after transplantation

Table 2. Serum protein electrophoresis

Fractions	Percentage	Ref.%
Albumin	60.4	55.8-66.1
Alpha1	6.1	2.9-4.9
Alpha2	10	7.1-11.8
Beta1	4.8	4.7-7.2
Beta2	6.3	3.2-6.5
Gamma	13.4	11.1-18.8

Due to the patient's condition and the examination of his family members, it was revealed that his wife was HIV-infected, and the patient was a Carrier at the time of transplantation. At this time, the virus was in the window period, and it was not detectable in viral tests, and by reducing WBC and weakening the immune system in the post-transplant process, the virus comes out of the window period. At this time, the patient was treated with antiretroviral drugs such as Ziduvodin, Vonavir, effective in the treatment of HIV, and drugs such as fluconazole, azithromycin and pyrimethamine for the treatment of toxoplasmosis. After three months of this treatment, by performing a series of experiments such as CBC and lymphocyte markers, the results are as follows:

WBC: $2.7 \times 10^3/\mu\text{L}$, Hb: 10g/dL, Plt: $65 \times 10^3/\mu\text{L}$ and differential white blood cell count was contained 25% and absolute lymphocyte count (ALC) :675 cells/ μL .His CD4 cell count was 27 cells/ μL (4%). The above results

indicate that the HIV infection is relatively well controlled and the patient is still under treatment and follow-up.

3. Discussion

About 6% of the immunodeficiency syndromes occur with lymphoma [8]. Multiple myeloma is a blood disorder characterized by the proliferation of monoclonal plasma cells [9] and this malignancy is very low in patients with HIV [10]. In previous studies, it has been proven that AIDS can progress and increase the risk of cancer [11]. HIV infection by mechanisms such as alters bone marrow niche microenvironment and increasing the risk of somatic hypermutation leads to the progression of multiple myeloma [6]. Our patient had some distinctive features: 1-In addition to multiple myeloma, he was also HIV positive. 2- Before the transplant, the patient was HIV-infected and the virus was also during the window period, so diagnostic tests could not be detected. 3-The multiple myeloma in the patient was as pancytopenia, which has a lower incidence [12]. 4-Using effective treatment methods such as highly active antiretroviral therapy (HAART) and combination chemotherapy, in addition to successful transplantation, HIV infection and toxoplasmosis were also controlled in the patient. There are two important factors that can't diagnose HIV infection in patients with multiple myeloma. The first factor is the HIV window period (4-12 weeks). The second factor is the similarity of some clinical and laboratory symptoms such as anemia, bacterial infection, pancytopenia, hypergammaglobulinemia, and bone marrow plasmacytosis, between HIV-positive patients with plasma cell malignancy and non-infected patients [12].

4. Conclusion

Our case illustrates the importance of HIV testing and family members' examination. Also, this article offers an

appropriate approach for the transplantation of autologous stem cells in HIV positive patients, which can be promising.

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