Case Report

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De Novo Hepatitis B Surface Antigen (HBsag)-Positive, Core Antibody (Anti-HBc)-Negative, Hepatitis B Virus İnfection Post Bone Marrow Transplantation

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1. Abstract

Bone marrow transplantation is a life-saving treatment for many patients with hematological malignancies, but it is also associated with a risk of reactivation of hepatitis B virus (HBV) infection. Therefore, patients undergoing bone marrow transplantation are routinely screened for HBV infection before and after transplantation. Screening is done with HBsAg, HBsAb, and anti-HBc. Antiviral prophylaxis is recommended for patients based on their infection and immune status before transplantation. Since bone marrow transplantation poses a high risk for HBV reactivation, patients may need to take antiviral prophylaxis based on their anti-HBc and HBsAg status before transplantation.
In this article, we present a case of de novo HBV infection in a multiple myeloma patient with anti-HBc negative, HBsAg negative, and HBsAb negative who underwent bone marrow transplantation.

2. Introduction

Hepatitis B virus (HBV) infection is a major public health problem affecting more than 250 million people worldwide. Turkey is a middle-endemic region in terms of HBV prevalence, with approximately 33% of the population being anti-HBc positive and exposed to hepatitis B virüs. Patients undergoing bone marrow transplantation are at risk for HBV reactivation, and it can lead to severe hepatitis, liver failure, and death. Therefore, it is important to screen these patients for HBV infection and immunity before transplantation and is recommended antiviral prophylaxis for intermediate-high risk group.
Before bone marrow transplantation, patients may need to be vaccinated based on their HBV status. Depending on the immunosuppression status during and after transplantation, adequate antibody response may not develop or HbsAb titers may decrease in these patients. Also antiHbc response may not develope due to immunsupression in newly developing HBV infection. Therefore, routine vaccination is recommended, and patients should be closely monitored for HBV reactivation.
In this article, we present a case of de novo HBV infection in a 63-year-old female patient diagnosed with multiple myeloma 3 years ago who underwent bone marrow transplantation.

3. Case Report

A 63-year-old female patient was diagnosed with multiple myeloma 3 years ago. The patient was HBsAg negative, HBsAb negative and anti-HBc negative before transplantation. However, after a year of transplantation, routine lab values check showed HBsAg positivity. The HBV DNA was high (45102 IU/ml). At that time, HBsAb, HBc IgM and IgG, and HBeAb were all negative. The patient's transaminase values were all normal. HBcAb test was repeated and reported as negative. Upon detailed patient history check, it was found that the patient had multiple erythrocyte and thrombocyte transfusions during the treatment process. Due to the high risk of reactivation, the patient was started on Entecavir prophylaxis. During the follow-up period, reactivation did not occur, and HBV DNA became negative. The patient was accepted as de novo HBV infection after transplantation and was regularly followed up in our clinic.

4. Discussion

De novo HBV infection is mainly due to latent HBV infection originating from donor grafts and the immunosuppressive status of platelet recipients. In our case, the origin of HBV could be due to multiple transfusions. Chronic HBV infection is associated with HBsAg and HBcAb positivity. However, after transplantation, adequate antibody response may not develop in patients receiving chemo-immunosuppressive therapy due to immune suppression like our case. Also our case was an immunosuppressed patient who used Daratumumab, bortezomib, cyclophosphamide, and

dexamethasone treatments.

Immune tolerance is another mechanism attributed to HBcAb deficiency. Antibodies against HBc antigen cannot be developed in patients who develop T cell anergy.

Melegari et al. found that nosocomial HBV infection developed in 12 patients with hematological malignancies receiving chemotherapy, and the patients had similar HBV serological tests to our case. Avettand-Fenoel et al. studied 39 patients who were HBsAg positive and HBcAb negative. All of the patients were either HIV-infected or solid organ transplant recipients.

5. Conclusion

These studies highlight the importance of screening and monitoring patients for HBV reactivation, receiving chemotherapy, bone marrow or solid organ transplantation, or with immunosuppressive conditions.

It is also important to keep in mind that the HBV serological tests of these patient groups may present differently than expected, close follow-up and monitoring and appropriate measures should be taken to prevent the development of HBV reactivation and its complication.

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