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Acute Hepatitis B in a Patient with Antibody to Hepatitis B Surface Antigen who was Receiving Chemotherapy for Acute Myelogenous Leukemia with Cytarabine and Daunorubicin.

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Abstract:

Hepatitis B virus asymptomatic carriers should receive treatment in certain conditions, such as prior to chemotherapy and organ transplantation. In these groups interferon alpha has limited efficacy or is even contraindicated. In contrast, lamivudine is highly effective in both preventing of and treatment of HBV reactivation in these immunosuppressed patients. Prevention of reactivation has better results than treating reactivation.

Key Words: Acute Hepatitis B, Acute Leukemia, Immunosuppression.

Introduction:

Hepatitis B virus (HBV) is a DNA virus and a member of hepadna family estimated that 300 million carriers are living world wide [(1)]. When the HBV infects the liver, it replicates and produces excess surface material, some of which reaches the blood. When there is less viral replication the virus core is only detected in the liver but not in the blood.

The marker for the surface is HBsAg and the marker for the core are HBeAg and HBVDNA [(1)].

Reactivation of hepatitis B virus (HBV) infection in HBSAg positive patients is a well documented complication of cytotoxic or immunosuppressive therapy. The incidence of hepatitis directly attributed to reactivation of HBV has been reported as high as 49% in HBsAg positive patients with lymphoma [(2)].

The precore mutant HBV is prone to reactivation and patients carring this virus are at risk for fulminant hepatitis.

In this case prophylactic treatment with lamivudine is strongly recommended[(3)].

Case Presentation:

A 30 year old Iranian man, a case of acute myelogenous leukemia (Monocytic type by morphology) and biphenotypic (T cell marker and myeloid marker with immune phenotyping) without previous history, clinical or biochemical evidence of liver disease.

Received standard chemotherapy with cytarabine (100mg/m2) for 7 days and Daunorubicin (45mg/m2) for 3 days.

Early complication was bone marrow suppression (neutrophil count about 50 and thrombocytopenia <10000).

Two weeks after chemotherapy the patient had rising of liver transaminases, alkaline phosphatase, bilirubin and also PT prolongation HBs Ag was found to be positive at this time. (table 1).

Table 1: Liver foundation test before and after chemotherapy.

Lab. Data	Before chemotherapy	14 days	16 days	18 days	20 days
AST	17	327	162	79	87
ALT	25	427	366	153	130
Alk. phosphatase	120	1250	1452	1616	2085
T.Bili	0.8	1.1	3.6	3.9	8.6
D.Bili	0.2	0.7	2.1	2.3	5.5
Albumin	4	3.6	3.5	3.2	4

The patient didn't achieve complete remission after chemotherapy and developed high grade fever and liver failure. At this time, lamivudine 100mg/day was started with prompt improvement with in one week.

Reactivation of hepatitis B infection can frequently be observed during cancer chemotherapy in chronic HBSAg carriers especially, when immunosuppressive treatment is stopped. The return of immune competence can be followed by liver damage.

Hepatitis B flares occurs in 21-53% of chronic HBSAg carriers and jaundice occurring in 10-22% and mortality from acute liver failure in these patients is 4-41% and fulminant hepatic failure occurs in 1% of affected patients [1].

Patients suffering from a chronic active hepatitis B due to a precore mutant respond poorly to interferon and multiples studies suggest that lamivudine may be superior [1].

Reactivation of HBV infection, despite the presence of anti-HBS has been reported after:

1- Bone marrow and solid organ transplantation [4].
2- Cyclic chemotherapy in non-Hodgkin's lymphoma [3]
3- Patients treated with rituximab [5].
4- During the course of the acquired immunodeficiency syndrome [5].

Lamivudine is a cytosine nucleoside analogue with activity against HIV and HBV after phosphorylation. Lamivudine is incorporated into DNA, terminating the growth of DNA chain it may also improve the responsiveness of T / lymphocytes against HBV [1].

Case reports suggest that lamivudine can be used to treat reactivation of HBV infection associated with chemotherapy or bone marrow transplantation [6]. Adefovir demonstrated efficacy against chronic HBV infection and may help in patients who developed resistance against lamivudine.

Lamivudine 100mg daily is recommended, one week prior to chemotherapy or upon diagnosis of HBV biological reactivation, during or after chemotherapy. It should be continued at least 6weeks after completion of chemotherapy [1].

Discussion:

According to previous data, we conclude that HBV serology should be part of the routine screening before initiating chemotherapy for leukemia patients and for all patients that who receive chemotherapy for cancer and before stem cell transplantation. Determination of HBV-DNA level may be helpful during therapy. Prophylactic use of an active antiviral agent such as lamivudine may result in a significant decrease in the incidence and severity of HBV reactivation after chemotherapy and bone marrow transplantation.

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