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Hepatitis B Reactivation in Patients with Acute Myeloid Leukemia. : A Case-Control Study

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ABSTRACT

Background: HBV reactivation is a major complication in AML patients receiving chemotherapy.

Objective: To evaluate HBV reactivation among HBsAg-positive AML patients and how HBV infection may be re activated by the effect of chemical drugs used in treatment of hematological abnormalities

Methods: Case-control study including 25 AML patients and 25 AML patients HBV negative in single center study all of them was over 18 years.

Results: Eight patients (32%) developed HBV reactivation and two deaths occurred while the others of case group remain nonactivated patients .

Conclusions: HBV reactivation remains a significant clinical challenge requiring routine screening and prophylaxis specially in patients on hematological abnormality .

INTRODUCTION

Chronic Hepatitis B infection impacts a significant portion of the global population[1]. The World Health Organization (WHO) estimated in 2015 that 257 million individuals could be chronically infected with hepatitis B, representing approximately 3.5% of the global population[2]. The hepatitis B virus (HBV) can result in liver cirrhosis and hepatocellular carcinoma. The WHO states that in 2015, roughly 887,000 fatalities resulted from complications associated with hepatitis B.

Acute myeloid leukemia (AML) is one of the most aggressive hematologic malignancies. HBV reactivation is increasingly recognized in immunocompromised patients. Hepatitis B is a major global health problem. It has been estimated that almost 296 million people are living with chronic hepatitis B infection in 2019.[1] Due to the persistence of cccDNA in the liver cell nuclei [2], complete cure of HBV infection is difficult to achieve, and HBV reactivation(HBVr) can occur in patients when treated with immunosuppressants[3],[4].

MATERIALS AND METHODS

This study is included patients who were 18 years or older; had a confirmed diagnosis of chronic myeloid leukemia; and had received treatment of any duration with one or more of the approved tyrosine kinase inhibitors (such as imatinib, dasatinib, nilotinib, and others). Patients who had any hepatitis serology marker at baseline when diagnosed with AML were included. We incorporated all studies for review, such as case reports, case series, and conference abstracts. Patients with chronic hepatitis B, regardless of hepatitis B virus e antigen (HBeAg) positivity prior to initiating

treatment .we excluded all patients infected with hepatitis for any other reasons like non-viral causers and also Non-B viral hepatitis , the patients included in this study was only patients with HBV who currently infected with leukemia .the selected control group was no history of viral hepatitis with AML.

RESULTS

Among 25 AML patients, 15 were male and 10 were female. HBV reactivation occurred in 8 patients (32%).it was measured by HBcAg for more accuracy in addition to serological measurements , all non-activated patients was measured by PCR using HBcAg and results was negative , while it remain serologically positive with IgG . Two deaths were documented among reactivated patients. Among 25 AML patients, 15 were male and 10 were female as it show in table (1),(2) and figure (1),(2).

DISCUSSION

This study describe the the American Gastroenterology Guidelines, the risk of HBVr in patients with hematological malignancy receiving chemotherapy is reported to be high (>10%) in patients receiving chemical treatment , with a recommendation to start prophylaxis treatment for such patients even if they have only HBcAb positive (HbsAg negative). The risk in patients receiving TNF, a moderate to high dose of steroids for 4 weeks, and patients receiving TKIs (e.g. imatinib, nilotinib, and dasatinib) is reported to be moderate (1-10%), with a recommendation for prophylaxis against HBV, but the strength of this recommendation is weak.[5][6].

CONCLUSION

HBV reactivation is common among HBsAg-positive AML patients receiving prednisolone and cytarabine chemotherapy.

RECOMMENDATIONS

1. . Universal HBV screening before chemotherapy.
2. Antiviral prophylaxis for HBsAg-positive patients.
3. Regular HBV DNA monitoring.
4. Early hepatology consultation.

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TABLES

Table 1. Demographic Characteristics.

Total AML patients	25
Male	15
Female	10
Age	>18 years

Table 2. Clinical Outcomes

HBV Reactivation	8 (32%)
No Reactivation	17 (68%)
Deaths	2
Controls with Reactivation	0

FIGURES

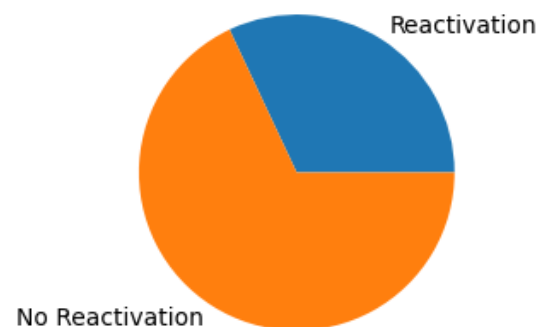


Figure 1. the distribution of reactivation of HBV infection in AML patients

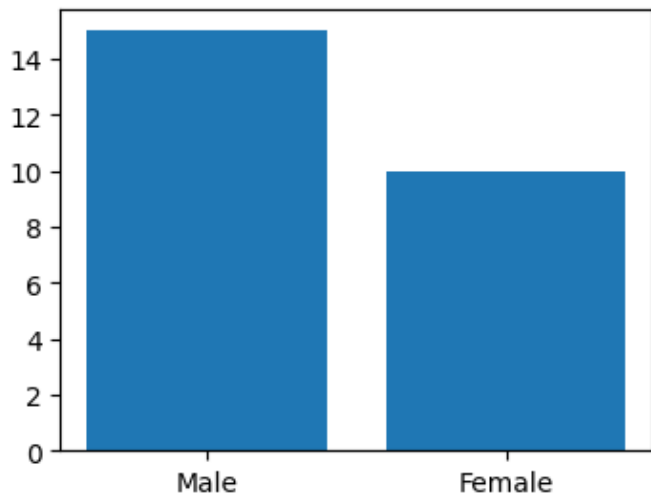


Figure 2. the distribution of HBV reactivation in AML patients according to gender .