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SHORT COMMUNICATION

Prevalence of chronic hepatitis in children with leukemia, 1996-2001: a single center experience

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Abstract

Background: There is a risk of viral hepatitis for children with leukemia. Both hepatitis B and C virus infections cause major problems in the management of leukemic patients. In this study, we evaluated the prevalence of HBV and HCV infections in children with leukemia receiving chemotherapy and blood products.

Methods: 408 patients with leukemia (mean age=5.1 years) were screened for HBV and HCV in Ali Asghar Children's Hospital. Liver function tests, the number of transfusions, HBV and HCV serology were regularly monitored. In seropositive children, HBV-DNA and HCV-RNA were measured. Liver biopsies were performed in all patients with chronic hepatitis and the data of the study were analyzed using SPSS software.

Results: HBsAg positivity, anti-HCV, and mixed HBV and HCV infections were found in 10 cases (2.5%), 8 cases (2%), and 1 case (0.2%) of children, respectively. Of HCV infected children, 8 had positive HCV-RNA. Mixed infection developed to chronic hepatitis in one case.

Conclusion: Children with cancer are at a high risk for hepatitis B and C infections due to immunosuppression secondry to chemotherapy and multiple transfusions of blood products during the course of their disease. We observed an increasing incidence of chronic hepatitis B and C infections. Thus no patient developed any signs or symptoms of decompensated liver disease and did not suffer from any severe liver impairment over 8 to 20 years.

Keywords: Hepatitis B; Hepatitis C; Leukemia; Lymphoma; Children; Cancer

Introduction

Children who have had multiple transfusions as a result of chronic anemia, cancer or hemophilia are at a high risk for HCV and HBV infections.[1-3] Patients who were treated for childhood cancer before HCV donor screening are a large population at a higher risk for transfusion acquired HCV infection.[3] In countries with a high prevalence of HBV and HCV infections, exposure to such infections is a frequent problem for children with cancer.[4] Routine hepatitis B vaccination in 1996 has played a major role in declining the infection in recent years in patients exposed to blood product transfusion,[4] but chronic hepatitis C infection is now recognized as an important health care issue.[2] For at least 80% of patients infected with the hepatitis C virus, the infection turned into the chronic type.[3] This study was undertaken to evaluate the long–term HCV and HBV infections in childhood cancer survivors (leukemia and lymphoma) receiving blood products before HCV donor screening in Ali Asghar Children Hospital.

Materials and Methods

Between 1996-2001, out of 1200 patients receiving blood products prior to the initiation of HCV blood donor screening at Ali Asghar ChildrenHospital while undergoing treatment for childhood leukemia & lymphoma and still surviving, 408 patients were screened for HBV and HCV. The patients were tested for anti-

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body to HCV and HBV infections, for serum PCR-RNA and genotype at the follow up. Alanine aminotransferase (ALT) liver biopsy test was performed on all patients with chronic hepatitis. The data were analyzed using SPSS software (Version 11.5, Chicago, IL).

Results

The findings showed that the mean age of the seropositive patients was 5/1+2/4 years (range 3.5 months-15 years). There were 163 (40%) females and 245 (60%) males.

Primary malignancies at the time of the diagnosis of hematological diseases before screening the blood donors were 363 cases of leukemia (89%) and 45 cases of lymphoma (11%). These patients were then followed up for 8-20 years (mean 11years) after chemotherapy withdrawal. These patients were screened for HCV and HBV infections, 8 (2%) were anti-HCV, PCR-RNA positive, and 10 (2.5%) were anti-HBV positive. Of the surviving patients who had evidence of HCV infection and 2.5% (10) of those who were HBV positive, 0.2% (1) had mixed infection (C, B). All the patients received at least 3 blood products (range 3-60) transfusions with a median of 14+2.9 transfusions.

Discussion

Children with cancer are at a high risk of hepatitis B and C virus infection due to multiple transfusions of blood products during the course of the disease.[4] The World Health Organization estimates that about 3% of the world population is currently infected with HCV. HCV is one of the leading causes of liver failure and cancer, and is the single most common indication for liver transplantation.[5,6] In most western countries and North America, the prevalence of HCV ranges from 0.3 to 0.7%.[4] In Iran the prevalence of HCV infection is about 0.12 % in blood donors.[7] The incidence of HBsAg positivity in children with cancer has been reported in various studies.[4] In a study conducted in Turkey, the risk of developing hepatitis B infection for children with cancer has been reported as high as 83% and 87%, respectively 2 and 5 years after diagnosis.[4] This high prevalence has declined through routine administration of HBV prophylaxis since 1993. Both viral load and host defense are important factors in determining the immune response.[4] Between 1961-1992, 1456 patients received blood products at SJCRH (St. Jude Children's Hospital) while undergoing treatment for childhood cancer. Among them, only 346 (23.8%) were confirmed to have HCV infection. All the patients received at least 1 blood product transfusion with a median of 10 (range 1-101) transfusions.[3]

In our study, among the patients who had been treated for leukemia, 2% were HCV positive, 0.2% had HBsAg and HCV positive infection, and 2.5 % were HBsAg positive.

Our patients showed mild symptoms of hepatitis during a very long follow up. None of them developed hepatic failure or cirrhosis whereas heptocarcinoma was found among our patients. These patients may require antiviral treatment even in the absence of liver histological data. These results show that the prevalence of hepatitis in our study is lower than that in other countries.

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