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Acute Lymphoblastic Leukemia and Toxoplasmosis*

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Infection is the most common complication in patients with acute leukemia. Since prolonged remission and survival have been obtained with the combination chemotherapeutics and prophylactic central nervous system (CNS) radiotherapy,[1] infection has become a significant problem during remission. Various kinds of micro-organisms including protozoal pathogens may cause disease and increase the fatality rate during remission.[2] Since there are very few reported cases of leukemia with toxoplasmosis we would like to present a patient with acute lymphoblastic leukemia (ALL) who recovered from toxoplasmosis.

Case Report

A 15-year-old girl was diagnosed as having ALL on November 1976. Remission was obtained with prednisone and vincristine within four weeks; prophylactic CNS radiation (2400 r) and intrathecal methotrexate were given for two and a half weeks. Combination chemotherapy consisted of purinethol and methotrexate orally. While she was in remission, sixteen months after the diagnosis of ALL she developed generalized edema and hypoproteinemia. Total protein was 5.2 g/dl and albumin 2.8 g/dl. She had no abnormal physical findings except edema.

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Her urinalysis was normal. Since she had very poor nutrition she was put on high protein diet and given salt free albumin. Edema disappeared within two weeks.

Five months later on November 1978 she came with the complaints of abdominal distention and swelling of the legs. Physical examination revealed jaundice, and ascites, the liver and the spleen were 1 and 4 cm. below their respective costal margins, and there was edema on the legs.

Laboratory findings were as follows: Hemoglobin was 11.2 g/dl, WBC 3720/mm^3 with 48 % neutrophils, 35 % lymphocytes, 7 % atypical lymphocytes, 10 % eosinophils, the platelet count was normal. Total bilirubin 4 mg/dl, direct bilirubin 2.5 mg/dl, total protein 5 g/dl, albumin 2.6 g/dl, serum glutamic oxaloacetic transaminase 50 U, serum glutamic pyruvic transaminase 80 U, thymol 11 U, alkaline phosphatase 3.8 B.U., blood urea nitrogen 8 U, prothrombin time 30 sec (normal 12), partial thromboplastin time 160 seconds (normal 60-120). Bone marrow smear had normal cellularity with erythroid hyperplasia and no blasts were seen. Between November 16th and December 6th, 1978 the Sabin-Feldman dye test titer rose from 1:64 to 1:1024 and toxoplasma fluorescent antibody titer was 1:1024 on IgG and 1:16 on IgM as determined on the serum obtained on December 8th.

The patient was treated with Bactrim 6 mg/kg/day and antileukemic drugs were discontinued. No change was observed in her hemoglobin, WBC and platelet value during this time. Six weeks after starting the treatment for toxoplasmosis, toxoplasma antibody titer, albumin, bilirubin, and transaminases returned to normal. Her general condition improved Bactrim was discontinued and she was put on maintainance antileukemic therapy again. At three month control no splenomegaly was observed.

Discussion

Children with leukemia are known to be susceptible to infections. While bacterial infections dominate during the induction phase of chemotherapy,[3] non-bacterial agents such as pneumocystis carinii, cytomegalovirus, listeria monocytogenes, disseminated varicella, herpes virus hominis, candida, and cryptococcosis have been documented to be etiological agents which may cause serious disease in remission phase.[2,4-7] Although toxoplasmosis in compromised hosts is recognized with increasing frequency,[8-12] it has rarely been shown in patients with leukemia.[2,13-15] In most cases toxoplasma infection has been recognized at autopsy.[2,12-16] In our patient toxoplasmosis was diagnosed with positive serological

reaction and fluorescent antibody test and she was successfully treated with Bactrim, no depressive effect was observed on the bone marrow. However, a patient with acute myeloblastic leukemia who developed fatal bone marrow aplasia after the treatment of toxoplasmosis with pyrimethamine and sulphadimidine which are folic acid antagonists has, been reported.[13]

Acute leukemia might be associated with episodes of fever and hepatosplenomegaly. These may sometimes cause diagnostic problems, since it may be difficult to determine whether the patient is in relapse or suffering from intercurrent infections. In adult leukemia infections resembling infectious mononucleosis due to cytomegalovirus, toxoplasmosis and Epstein-Barr virus have been documented.[15] When a leukemia patient in remission shows jaundice and hepatosplenomagaly these possibilities should be investigated.

Summary

A 15-year-old girl with ALL developed toxoplasmosis while she was in remission. Most of the acquired toxoplasma infections in compromised hosts are diagnosed at autopsy. The importance of antemortem diagnosis and the good response to the treatment in our patient are discussed.

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