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Hairy cell leukemia: clinical presentation and long term follow up after treatment with 2-chlorodeoxyadenosine (2-CdA)

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Short Report

Hairy Cell Leukemia: Clinical presentation and Long Term Follow up after Treatment with 2-Chlorodeoxyadenosine (2-CdA)

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Abstract

The aim of the study was to the clinical features and long term follow up after treatment with Cladarbine in a tertiary care hospital. Seven patients with hairy cell leukemia were diagnosed between January 1990 till December 2003. Diagnosis in all the patients was established by bone marrow aspirates and trephine biopsy along with TRAP. In two patients the diagnosis was supplemented by flowcytometry and in another two patients by splenectomy. Six patients were male while one was female. Mean age was 47.7 years (range 36-64). Most common presenting features were pallor and weakness (n=5). All patients had splenomegaly. Blood count at presentation revealed that one patient had bicytopenia, two had isolated thrombocytopenia, and three had pancytopenia. Treatment responses were evaluable in seven patients. Complete response was seen in six patients (85.7%). One patient died after two months due to sepsis while 3 (50%) patients relapsed. Those who relapsed received another course of CDA and have maintained remission with a median duration of response of 48 months (20-48). From this small series we can conclude that CDA is an effective treatment for HCL and even it works very well in relapsed cases.

Introduction

Hairy cell leukemia (HCL) is a rare chronic lymphoproliferative disorder of B-lymphocytes. It represents the clonal expansion of B cell.[1] This is predominantly a disease of young adult males principally involving the bone marrow and spleen. They usually present with features like pancytopenia along with circulating hairy cells (Figure 1). Diagnosis is based on peripheral blood film, bone marrow and bone trephine biopsy. Immunophenotyping can be used to supplement the diagnosis in suspected cases.[2] Bone marrow aspirate is generally hypocellular with hairy cells infiltration along with residual hemopoietic tissue. In a large number of patients aspirate is difficult because of fibrosis.[1] Bone trephine shows monotonous cells with round or oval nuclei separated by pale staining cytoplasm in a fibrillar network, referred to as fried egg appearance (Figure 2). Tartrate resistant acid phophastase (TRAP) is strongly positive in majority of cases.[3] Immunophenotyping by flowcytometry is another tool to supplement the diagnosis of HCL. These cells express CD 20, CD 22, CD 11c, CD 25 and CD 103.

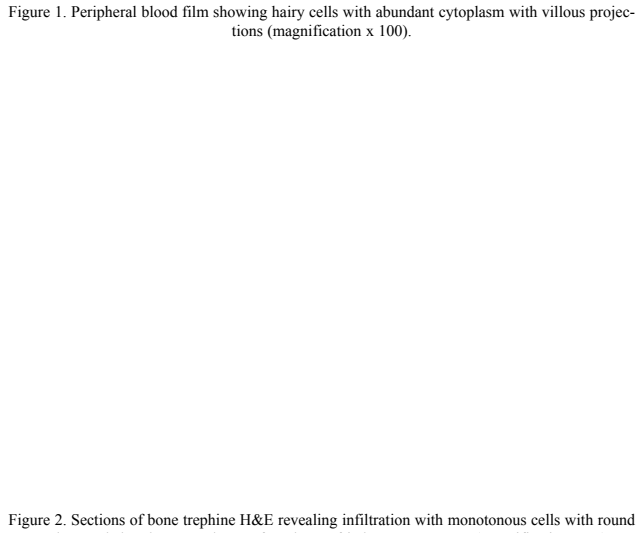

Figure 1. Peripheral blood film showing hairy cells with abundant cytoplasm with villous projections (magnification x 100).

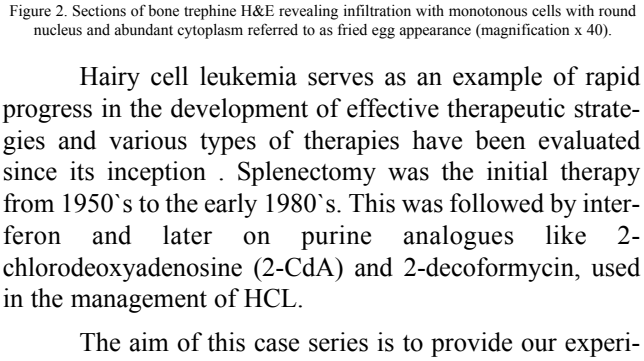

Figure 2. Sections of bone trephine H&E revealing infiltration with monotonous cells with round nucleus and abundant cytoplasm referred to as fried egg appearance (magnification x 40).

Hairy cell leukemia serves as an example of rapid progress in the development of effective therapeutic strategies and various types of therapies have been evaluated since its inception . Splenectomy was the initial therapy from 1950`s to the early 1980`s. This was followed by interferon and later on purine analogues like 2-chlorodeoxyadenosine (2-CdA) and 2-decoformycin, used in the management of HCL.

The aim of this case series is to provide our experience of hairy cell leukemia including clinical features and response to 2-CdA.

Methods and Results

It was a retrospective case series conducted from January 1990 till December 2003. Purposive sampling was done and data was retrieved from medical record department using ICD (International Classification of Disease) system. All patients diagnosed to have hairy cell leukemia were included and the diagnosis was established on complete blood counts with peripheral smear, bone marrow and bone trephine examination. These slides were reviewed by two hematologists. TRAP was done to further complement the diagnosis. Immunophenotyping by flowcytometry (Becton Dickinson, San Jose, U.S.A.) was required in two patients to confirm the diagnosis. All patients with hairy cell leukemia variant and any other lymphoproliferative disorder or patients who did not receive 2-CdA were excluded.

Informed consent was taken from all the patients before the administration of the drug. Criteria to start therapy were hematological parameters including anaemia <9gm/l., neutropenia <0.5 10^9/L and platelet <50,000 10^9/L.[1] Other less common indications were symptomatic splenomegaly or bony involvement. 2-CdA was given in a dose of 0.09mg/kg of body weight daily by continuous intravenous infusion for a total of seven days.

Established criteria of response were used.[4] Complete response was defined as relief of symptoms, regression of spleen size and normal blood counts along with disappearance of evidence of HCL from peripheral blood and bone marrow.

Relapse was defined as re-appearance of splenomegaly along with demonstration of leukemic cells on peripheral film and bone marrow examination.

A total number of seven patients were included in the study with a mean age of 47.7 years (range 36-64) and a male to female ratio of 6:1. Most common symptoms at the time of presentation were pallor and weakness (n=5 [71.4%]) followed by heaviness in left hypochondrium (n=2 [28.6%]) and fever (n=2 [28.6%]). Examination revealed pallor in five patients (71.4%) while splenomegaly was present in all patients. Complete blood counts showed pancytopenia in three patients (42.8%), isolated thrombocytopenia in two (28.6%) while anemia and bicytopenia was seen in one (14.3%) respectively. One patient had received interferon initially and relapsed after one and a half month. Another patient received interferon for one year then later on relapsed and underwent splenectomy. He relapsed again one year after splenectomy. Both these patients then subsequently received 2-CdA.

Complete response was seen in six patients (85.7%) while one patient did not respond and died due to sepsis secondary to primary disease after four months of receiving 2-CdA. At a median follow-up of 82 months (range 5-157) three patients (50%) relapsed. Median response duration after first dose of 2-CdA was 56.5 months (range 5-108). All three patients who relapsed after a median of 54 months (range 24-60) were given second dose of 2-CdA, which was similar to the first dose. All the patients responded to the second dose of 2-CdA with a median duration of response of 48 months (20-98). Overall survival was 85.7% with a median follow-up of 80.5 months.

Comments

Hairy cell leukemia is a malignancy mainly seen in young adult males. Most common signs at presentation were pallor and splenomegaly. Complete blood counts at presentation in majority of our patients revealed either pancytopenia or isolated thrombocytopenia. It was noted that the first dose of 2-CdA induced complete remission in overwhelming majority and relapsed patients can also be successfully retreated with 2-CdA. Our data also confirmed that both the first and second dose can produce lasting remissions.

Our findings are in agreement with the results of other studies[5,6] which report complete remission in patients with HCL treated with 2-CdA.

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