Research Article

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Radiotherapy As A Treatment Of Hairy Cell Leukemia: A Case Report

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1. Introduction

Hairy cell leukemia is an unusual cancer of the blood. It affects B cells, the cause of this disease is unknown. It affects men more often than women. The average age of diagnosis is 55 years old. It is considered a chronic lymphatic leukemia because it may never completely disappear, although treatment can lead to remission for years. The diagnosis of this disease is based on morphology of the leukemic cells (hair-like) in either the peripheral blood or the bone marrow biopsy and inmunophenotypic profile (express CD11c, CD25, CD103 and CD123 and display bright CD20 but negative for CD5). Patient age, hemoglobin level and massive splenomegaly are associated with a worse prognosis [2]. The decision to treat depends on symptoms of bone marrow failure (anemia, trombocytopenia, infection), splenomegaly that can cause digestive symptoms and decline in peripheral blood counts. If massive splenomegaly occurs the treatment is splenectomy or palliative irradiation on the splenic volume to improve peripheral blood counts.

A common regimen would be 1 Gy given three times per week to a total dose of about 5 to 10 Gy [3]. The initial treatment more used is chemotherapy (purine nucleoside analog with or without monoclonal antibody). The node affection is rare but the advent of non invasive imaging revealed that more patients have intra-abdominal lymph node enlargement than was initially appreciated. Patients to relapse require retreatment with more chemotherapy or refer for inmunotoxin conjugate therapy. In addition to relapse, there are patients who develop resistant disease or fail to respond to initial therapy. Despite the high percentage of durable complete remissions with modern therapy, the long-term disease-free survival curves have not reached a plateau [2].

2. Case Report

A 46 year-old man whit a history of high blood pressure, diabetes type II and subaracnoid haemorrhage was diagnosticated of hairy cell leukemia in april 2005 and the splenectomy was performed with an haematological partial response. A PET-CT was done in May 2006 showing some nodes in mediastin, celiac trunk and a big retroperitoneal mass (SUV max 7.5g/ml). A biopsy of these mass confirmed the abdominal progression of the hairy leukemia. He also received 8 cycles of chemotherapy with deoxicoformicine (4 mg/m2 every two weeks) between may and October 2006 and a partial haematological response and not retroperitoneal mass response were obtained (PET-CT on October 2006: retroperitoneal mass without changes in size and SUV max 10g/ml). We decided carry on with chemotherapy using Rituximab-deoxicoformicine by 8 cycles between October 2006 and may 2007. We obtained a complete haematological response but on May 2007 PET-CT (Figure 1A).

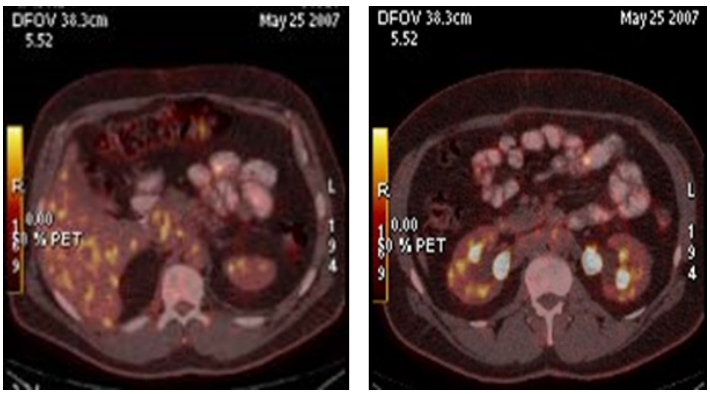

Figure 1A

The retroperitoneal mass was significantly smaller with SUV max 4g/ml. At this point we decided to use the radiation therapy because of the retroperitoneal mass persistence in PET-CT despite the use of chemotherapy.

Between the 10th and 31th of august 2007 we irradiated the retroperitoneal mass volume with 2 cm of margin to a total dose of 30 Gy fractionated in 2 Gy per day 5 days a week by two conformated fields antero-posterior and postero-anterior (Figure 2).

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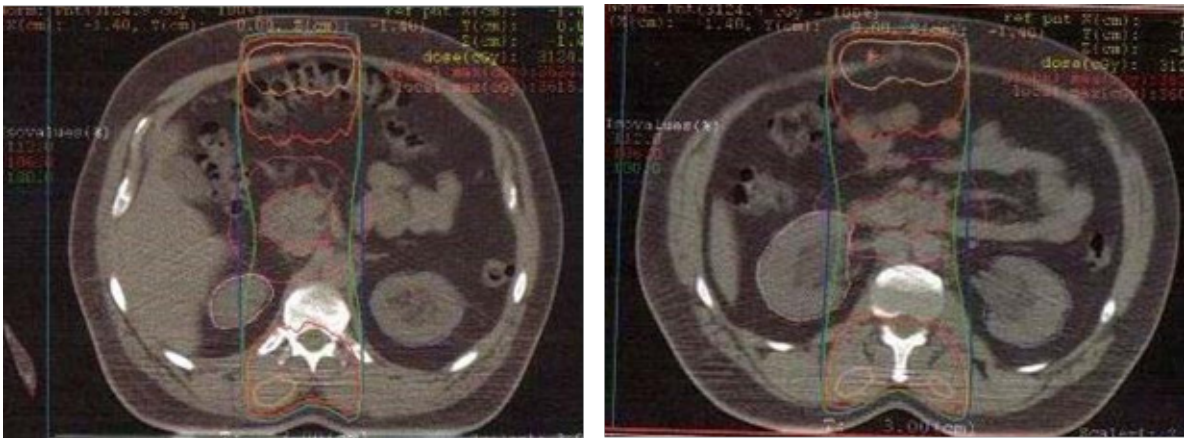

Figure 2

We used a linear accelerator with photons of 15 MV energy. The acute toxicities during radiotherapy treatment were abdominal distension and dyspepsia Grade 1 and not chronic toxicity appeared. We continued chemotherapy treatment with Rituximab during 2 years. Patient was followed every three months with blood test and image control. On January 2008 we realized PET-CT (Figure 1B) withouth patologic raising and consecutives PET-CT have been negatives until last revision in June 2011.

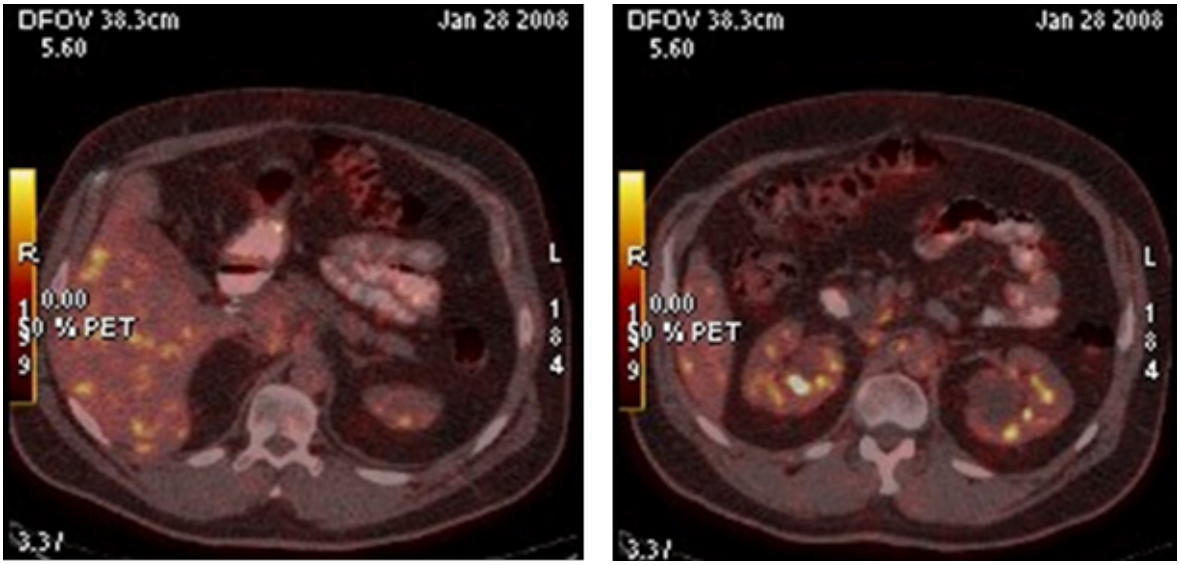

Figure 1B

3. Discussion

The initial treatment for hairy cell leukemia disease is based on purine nucleoside analogs (cladribine or pentostatin). Cladribine has generally been regarded as the treatment of choice, with pentostatin being recomended for those in relapse. The recent long-term data support the fact that these agents are indeed equivalent. The overall complete response rate of patients in first relapse receiving a purine nucleoside analog approximates 69%.

Purine nucleoside analogs chemotherapy treatment produces remarkably high remission rates (91%) and high rate of complete remission (75-90%) [4,5]. Despite the improved in overall survival rate with these purine nucleosid analogs, relapse rate of approximately 30% to 40% occurs in long term follow up studies [6-10]. Patients who have relapsed have been successfully treated with combined chemo-inmunotherapy using rituximab and a purine nucleoside analog at relapse [11]. Several reports indicate that minimal residual or resistant disease after induction therapy with a purine nucleoside analog can be eradicated by monoclonal therapy (rituximab) [2]. Innovative targeted therapy using immunotoxin conjugates has been successfully applied to patients with purine analogresistant disease (LMB-2 recombinant immunotoxin directed against CD25 or BL22 recombinant immunotoxin directed against CD22). Combined therapy may take advantage of the incorporation of an immunotoxin conjugate after initial cytoreductive therapy with a purine nucleoside analog [12]. Radiotherapy is only used as a palliative treatment for these patients when the splenomegaly produces symptoms.

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The hairy celll leukemia affected nodes are frequently chemotherapy resistant instead they are sensitive to radiotherapy. However the radiotherapy advantage is poor for patients with big mass volume and progressive disease. There are not consolidated orders to use radiotherapy as an adjuvant treatment for these patients in the scientific literature. This patient achieved a good treatment response and we decided to give radiation therapy for complete treatment over the retroperitoneal residual mass volume, because we wanted to obtain a long-term or definitive local control, as well as we used to treat the low grade lymphomas.

We have demostrated that radiotherapy is an effective treatment in hairy cell leukemia patients who shows local nodes enlargement that not response to chemotherapy. Therefore we think that adjuvant radiotherapy can be used for some specific cases like the case we show.

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