

A Hairy Cell Leukaemia Variant – A Rare Case Report

PANKAJ PANDE, BALASAHEB RAMLING YELIKAR, MAHESH KUMAR U

ABSTRACT

The aim of the article is to present a rare case of Hairy cell leukaemia variant (HCL-V) which is a distinct clinico-pathological entity with intermediate features between classical HCL (HCL-C) and B-cell prolymphocytic leukaemia. It is an uncommon disorder accounting for approximately 0.4% of chronic lymphoid malignancies and 10% of all HCL cases. A 58 year old woman presented with pain abdomen and loss of weight. On examination she had massive splenomegaly. Peripheral smear was reported as chronic lymphoproliferative disorder (? Hairy cell leukemia or splenic lymphoma with villous

lymphocytes). On Bone marrow examination, differential diagnosis was given as splenic lymphoma with villous lymphocytes (SLVL) and prolymphocytic variant of Hairy cell leukemia. On flow cytometric analysis, these cells were positive for CD11c, CD19, CD20, and CD22. Based on the clinical, peripheral smear, bone marrow and flow cytometry findings, a diagnosis of hairy cell leukaemia variant was confirmed. The differential diagnosis should always include SLVL, HCL-C and Japanese variant HCL because they have different clinical and biological features, particularly regarding their response to purine analogue-based treatment or splenectomy.

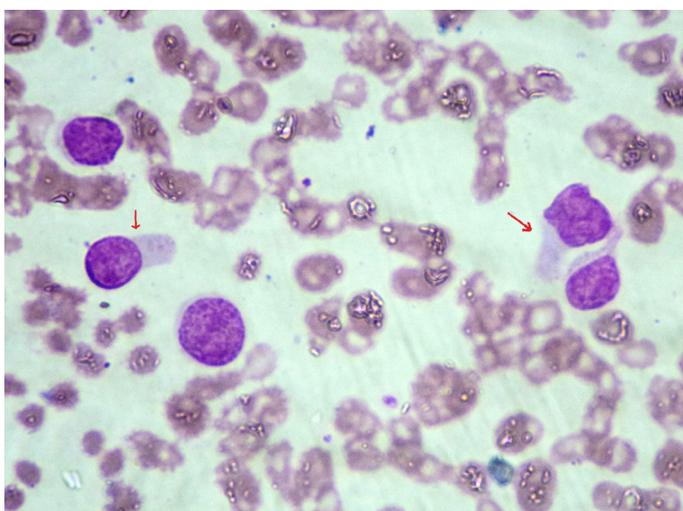
Key Words: Flow cytometry, Hairy cell leukemia variant, Massive splenomegaly

INTRODUCTION

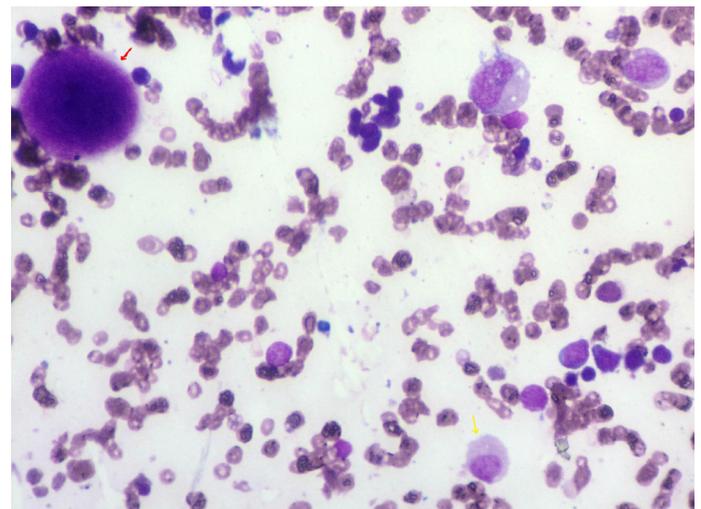
Hairy Cell Leukaemia (HCL) is a rare and an indolent form of a small, mature, B-cell leukaemia which is characterized by oval or indented (bean-shaped) nuclei and abundant “hairy” cytoplasm, which involves the Peripheral Blood (PB), Bone Marrow (BM) and the spleen [1]. As compared to the classical HCL, the hairy cell leukaemia variant (HCL-v) is a more aggressive disease. It is no longer considered to be biologically related to HCL and it has been included in the 2008 World Health Organization (WHO) classification as a provisional entity [2]. HCL is a rare disease which comprises about 2% of the lymphoid leukaemia in the west [1]. Its incidence is lower in Asia and it is even lower in India.

CASE PRESENTATION

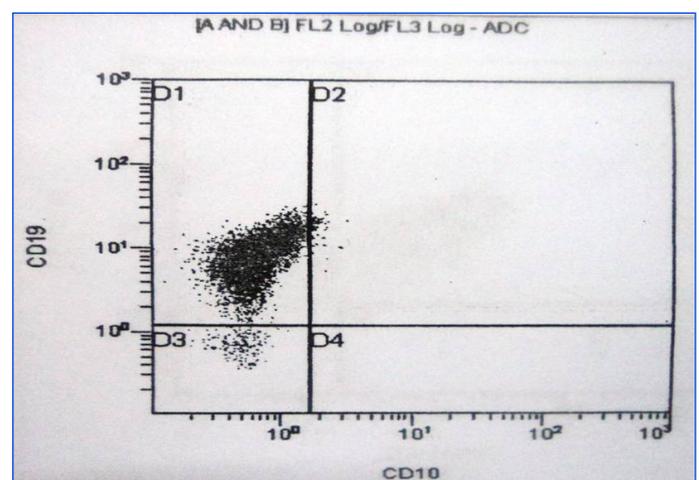
A 58 year old woman presented with pain in the abdomen and loss of weight. Her physical examination revealed a moderately pale



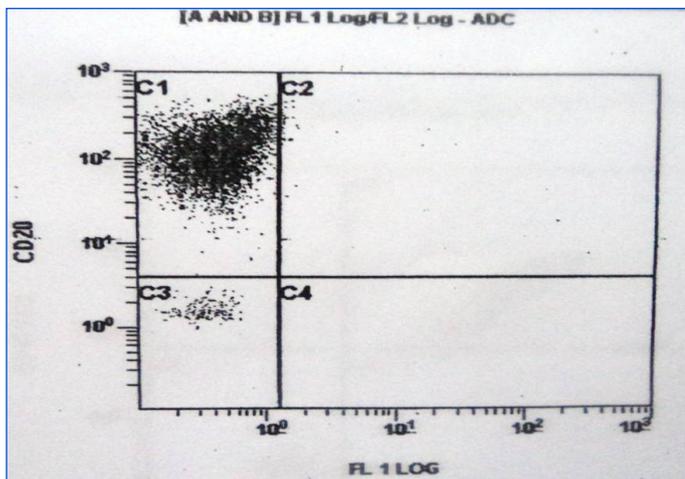
[Table/Fig-1]: Peripheral smear showing abnormal lymphocytes with villous/hairy cytoplasmic projections (Red arrows)



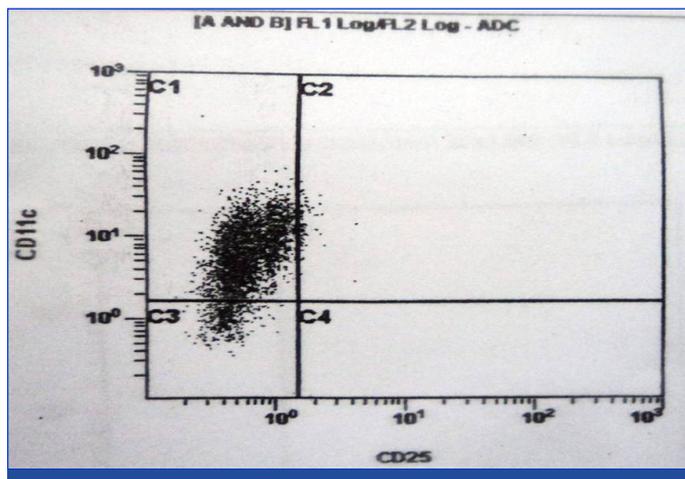
[Table/Fig-2]: Bone marrow smear showing megakaryocyte (Red arrow) and hairy cell (Yellow arrow)



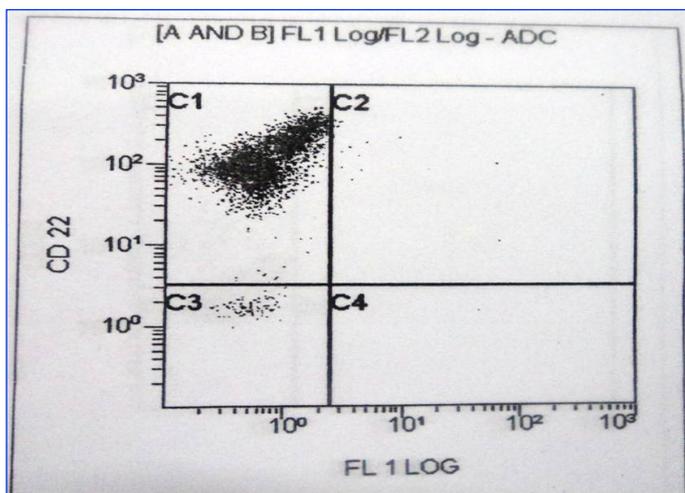
[Table/Fig-3]: Flow cytometric dot plots show the existence of an abnormal cells with expression of CD19



[Table/Fig-4]: Flow cytometric dot plots show the existence of an abnormal cells with expression of CD20.



[Table/Fig-6]: Flow cytometric dot plots show the existence of an abnormal cells with expression of CD11c.



[Table/Fig-5]: Flow cytometric dot plots show the existence of an abnormal cells with expression of CD22.

lymphocytes, 3% monocytes, 2% eosinophils and 66% abnormal lymphocytes. These abnormal lymphocytes exhibited villous/hairy cytoplasmic projections and small round nuclei with condensed chromatin and a distinct nucleolus. Her peripheral smear was reported as chronic lymphoproliferative disorder (? Splenic Lymphoma with Villous Lymphocytes (SLVL)/Hairy cell leukaemia) [Table/Fig-1]. On bone marrow examination, the differential diagnosis was given as Splenic Lymphoma with Villous Lymphocytes (SLVL) and a polymorphocytic variant of Hairy cell leukaemia [Table/Fig-2].

On flow cytometric analysis, these tumour cells were found to be positive for CD11c, CD19, CD20, CD22 [Table/Fig-3,4,5 and 6], FMC7, HLA-DR, SmlgD and the Kappa light chain and to be negative for CD 25.

Based on the clinical, peripheral smear, bone marrow and the flow cytometry findings, a diagnosis of a hairy cell leukaemia variant was made. The patient died within 3 months of the diagnosis because of her refusal of the treatment.

Characteristics	HCL Classical	HCL Variant	HCL Japanese Variant	Splenic Marginal Zone Lymphoma
Median age (y)	55	71	60	69
WBC count	Low	High	High	High
Cytoplasmic projection	Uneven microvilli	Uneven microvilli	Uneven microvilli	Usually polar
Nuclei	Oval, indented, bilobed	Round, occasionally bilobed	Round	Round
Nucleoli	Indistinct	Prominent (60%)	Inconspicuous	Small (50% distinct)
Histology of Bone marrow	Inter sinusoidal	Interstitial, Intersinusoidal	Usually interstitial	Intersinusoidal
TRAP activity	Positive	Negative	Absent to weak	Weak
Immunophenotype of leukemic cells	CD11c+,CD25+, CD103+, CD123+, CD10+/-.	CD11c +/-,CD 19+, CD 20+, CD 22+, CD25-,CD103+/, CD123-,CD10+/-	CD11c+, CD25-, CD10-	CD11c+, CD25+/-, CD103-

[Table/Fig-7]: Differences between classical hairy cell leukemia, hairy cell leukemia variant, hairy cell leukemia Japanese variant and splenic marginal zone lymphoma. 4

woman without jaundice and fever. The respiratory, cardiovascular and the nervous systems were within normal limits. Her abdominal examination revealed a firmly enlarged spleen which extended down to the level of the umbilicus. The liver was not palpable and no signs of chronic liver disease or ascites were present. No lymphadenopathy was noted.

PATHOLOGY

Her haemogram showed a WBC count of 26,000cells/cu mm, a haemoglobin level of 6.8gms/dl, and a platelet count of 75,000cells/cu mm. The differential count showed 19% neutrophils, 10% small

DISCUSSION

The HCL-v cases are defined as cases of small B-cell lymphoproliferative disorders which resemble classical HCL but exhibit variant features in the haemogram (leukocytosis without monocytopenia), cytomorphology (neoplastic cells with prominent nucleoli, with blastic or convoluted nuclei and/or absence of the circumferential shaggy contours), cytochemistry (a weak or a negative reaction for TRAP), immunophenotype (absence of CD25, annexin A1 or TRAP), and resistance to the conventional HCL therapy [2,3].

The bone marrow is typically aspirable in HCL-V, HCL-JV and SLVL. In contrast to these disorders, a "dry tap" is often encountered on

bone marrow aspiration in the HCL-C patients. A majority of the HCL-V patients have interstitial bone marrow infiltration, with scattered hairy cells lying within the sinusoids. However, approximately 20% of the patients have a mixed, interstitial and a nodular pattern of the bone marrow. In addition, a pure sinusoidal and an intrasinusoidal bone marrow involvement have also been occasionally reported [4].

The hairy cell leukaemia variant should be differentiated from the classical hairy cell leukaemia, the hairy cell leukaemia Japanese variant and a splenic marginal zone lymphoma [Table/Fig-7], [4].

In the Asian countries, there are limited number of reports on HCL. The largest study was done in Japan, which was reported by Machii T et al., Only 9 cases were of classical HCL, 2 cases were of the HCL polymphocytic variant and the remainder were of the so called "HCL-Japanese variant", as they frequently presented with a high WBC count and with a distinct CD25- negative hairy morphology [5].

In an Indian series from New Delhi, 15 cases of HCL, who were aged 32-57 years (median age- 47 years) were reported [6]. The clinical presentations included splenomegaly, hepatomegaly and fatigue. The patients from India were relatively young, in contrast to the older patients of HCL in the western countries.

CONCLUSION

It is important to accurately diagnose SLVL, HCL-C and the Japanese variant of HCL entities, because they have different clinical and biological features, particularly with regards to their response to the purine analogue-based treatment or splenectomy.

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