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Dengue Febrile Illness in Hairy Cell Leukemia

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Abstract: *We report a case of Dengue febrile illness with features of anaemia, splenomegaly, and thrombocytopenia diagnosed to have Hairy cell leukemia (HCL). Diagnosis of dengue is aided by NS1 antigen (ELISA) & Hairy cell Leukemia on bone marrow & immunophenotypic analysis. Occurrence of this infection in HCL is unheard in literature*.

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I. Introduction

Leukemic reticuloendotheliosis or hairy cell leukemia is a ß cell lymphoproliferative disorder accounting for about 2% of all leukemias. This disorder is characterized clinically by splenomegaly, pancytopenia & neoplastic mononuclear cells in peripheral smears, bone marrow & typical immunophenotypic observations. The neoplastic clone grows slowly preferentially from spleen & bone marrow & subtle spill over in the peripheral smear. Hence, the course of the disease remains very indolent. One remarkable clinical characteristics of HCL patients is the susceptibility to develop life threatening infections; such infections may remain the primary cause of morbidity & mortality[1,2]. The association of Dengue febrile illness in HCL is not described in the literature. The presence could be co-occurrence & its existence because of susceptibility towards this disease.

II. Case History

A 60 year old Indian male patient, farmer by occupation, was referred to our tertiary care hospital who presented with shortness of breath, fatiguability, fever for past 5 days. His high grade temperature was associated with Headache, retro-orbital pain, myalgias, & chills. Patient denied history of vomiting's & weight loss & any bleeding diathesis. The patient was a non-smoker, non-alcoholic & denied any significant family history. Couple of months back, he was hospitalized with physician for anaemia & fever, no documents were available with the patient. Patient is also reported to have pancytopenia 2 years back in 2015 & denied history of any blood transfusion in past. On examination, patient was moderately dyspneic with respiratory rate of 28 cycles per minute, temp. 39°C, pulse rate was 96/min. in sinus rhythm. Mild signs of dehydration were apparent. Clubbing, cyanosis, petechiae were not noted. Patient was pale with mild icterus. The systemic examination revealed gross splenomegaly & 2 cm palpable, non-tender liver subcostally. There was no ascites.

The patients lab workup included Hb-7.3 gm%, WBC-620/cumm (N-30, L-58, M-1, E-3), RBCs-3.67million/cumm, PCV-29%, MCV-79.5 fc, Platelets-60,000/cumm, T Bilirubin-2.3mg% (Direct-1mg% & ID-1.3mg%), SGOT-20U/L, SGPT-40U/L, LDH- 127U/L. Ultrasonography revealed gall bladder distended &acalculic, spleen size was 215mm enlargement, & mild B/L pleural effusion. INR-1.22, PT-13sec. X ray chest PA view revealed minimal B/L pleural effusion (non-tapable), NS1 antigen was positive for Dengue fever.

Patient was placed on symptomatic therapy & IV fluids, his condition improved in a week. Because of anaemia, persistent low platelet counts, leucopenia & big splenomegaly, bone marrow aspiration/ bone marrow biopsy for immunohistochemistry & reticulin stain was carried out. The bone marrow revealed prominence of lymphoid cells seen diffusely. These cells have clear cytoplasm. Nucleus is round to ovale with evenly distributed chromatin giving a fried egg appearance. Erythroid & myeloid precursors were reduced. Megakaryocytes seen 2-3 /HPF with normal morphology. The gated population of cells show moderate CD-45 positivity & CD-19 positivity. These cells express bright CD-22, Moderate CD-20, FMC-7, Kappa, CD-123, CD-25, dim CD-11c & CD-103. These cells are negative for CD-5, CD-10, CD-23, Lambda, CD-2, CD-3, CD-4 & CD-8. CD-4:CD-8 ratio in T cells is 1:1.5 . Reticulin stain showed grade-II condensation of fibres. Morphological & immunophenotypically findings were consistent with diagnosis of Hairy cell leukemia.

Two weeks after the admission, the patient was treated with Cladribine 0.15mg/kg for 5 consecutive days for his primary hematological disease. The case was transferred to hematologist for further follow up. The clinical course was reported to be uneventful after 4 months under care of hematologist.

III. Discussion

Hairy cell leukemia is a ß lymphoproliferative disorder affecting chiefly elderly male with male to female ratio of 4:1. Though cases of HCL have enhanced susceptibility for developing infections yet the literature on pattern of infections in these cases are not well delineated. Approximately 25%-70% HCL cases present or having documented infections during the course of the disease[3]. The susceptibility to infections comprise those typically seen in neutropenic patients. The rate of infections are higher in those patients having active disease, higher tumor burden & marked immunodeficiency. The course of infection may range from asymptomatic to severe pneumonia & septicemia. There is a clear preponderance of gram negative rod organisms with P. aeruginosa & E. coli as the most important bacterial isolates[4]. Fifty percent infection comprise atypical mycobacterial infections, Lysteria, Pneumocystis, Legionella, viral infections, aspergillus & other fungal infections[5]. Q fever as initial presentation of HCL is described by Ammatuna& associates in 2014[3]. Dengue fever is a viral infection transmitted by mosquito Ades Aegypti. Ades Aegypti mosquito is found in tropic & sub-tropic regions & is commonly known to flourish due to poor control measures. The dengue disease & its severity is classified based on WHO classification system 2011[6]. Although most symptomatic infections follow an uncomplicated course, complications & unusual manifestations are now being increasingly recognized. Expanded dengue syndrome has unusual atypical features which includes neurological, hepatic, renal, thyroid, cardiac, hematological & pulmonary involvements expressed as complications of severe disease/ host conditions or coinfections. Here we present a case of severe anaemia, thrombocytopenia, neutropenia, splenomegaly having Dengue fever. The patients splenomegaly was quite large clinically & on sonography. Gall bladder was distended &acalculic, an important feature recorded in dengue febrile illness. The NS1 antigen was positive on 5th day of febrile illness. Although platelets were low, Hiss test was negative. Bone marrow & immunophenotypic analysis consistent with the diagnosis of HCL. The patient was not provided any antibiotics & was receiving IV fluids & supportive therapy. Patient was treated with Cladribine 0.15mg/kg for 5 days for his primary hematological disease. Patient has been under care of hematologist at the present & is reported to be doing stable with health.He did not give consent for BRAF V600E mutation analysis as suggested by immunopathologist.

IV. Conclusion

We conclude that in established cases of HCL, the endemic infections like malaria, dengue besides potential infections having susceptibility towards HCL should not be overlooked. Reporting of such double edged disorder entity is encouraged for such cases which are infiltrating &/or suppressing the bone marrow could enhance the clinical & hematological scenario of the case. The infection/ infectious disease detection is warranted in such coexisting pathology.

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