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General Medicine

CHRONIC LYMPHOCYTIC LEUKEMIA (CLL) - A COMPREHENSIVE ANALYSIS IN THE CONTEXT OF A COMPLEX CLINICAL PRESENTATION

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ABSTRACT Chronic Lymphocytic Leukemia (CLL) is a common hematological malignancy characterized by the accumulation of abnormal lymphocytes in the blood and lymphoid tissues. This article explores CLL in the context of a complex clinical presentation, highlighting the diagnostic challenges and multi-disciplinary approach required for comprehensive patient care. We discuss the case of Mr. Ramachandran, a 75-year-old male, who presented with fever, abdominal pain, and vomiting, ultimately diagnosed with CLL. The case illustrates the importance of considering CLL as a potential cause of diverse symptoms and the significance of early detection and intervention

KEYWORDS :

INTRODUCTION

Chronic Lymphocytic Leukemia (CLL) is a slow-growing cancer that primarily affects older adults, characterized by the accumulation of mature-looking but dysfunctional lymphocytes in the blood and lymphoid tissues. CLL often presents with nonspecific symptoms, making it challenging to diagnose, especially when complicated by other medical conditions. In this article, we discuss the case of Mr. Ramachandran, a 75-year-old male patient, who presented with a constellation of symptoms, leading to the diagnosis of CLL. We will analyze the case in detail, emphasizing the importance of a multi-disciplinary approach and early intervention.

CASE DISCUSSION

Mr. Ramachandran, a 75-year-old male, presented with a myriad of symptoms that posed a diagnostic challenge. His complaints included fever, abdominal pain, vomiting, and a gradual loss of appetite, with the fever characterized by chills and rigor, persisting for 15 days. His medical history revealed a long-standing history of alcohol and tobacco use, which ceased approximately nine months ago. On examination, he appeared conscious, oriented, and febrile, with notable axillary lymphadenopathy and hepatomegaly.The initial evaluation included a complete blood count (CBC), which revealed an elevated total leukocyte count (TLC) of 40,520, along with a platelet count of 1.20 lakhs. Due to the pronounced increase in the white blood cell (WBC) count, a peripheral smear was performed. The peripheral smear results were intriguing, showing normocytic normochromic red blood cells (RBCs) alongside microcytic hypochromic RBCs. Additionally, there was an evident increase in immature cells, blast cells, and atypical lymphoid blast cells, which were concerning findings. Promptly recognizing the potential gravity of these findings, an oncology consultation was sought, leading to a set of crucial diagnostic measures. Immunophenotyping was recommended to discern the nature of the abnormal lymphocytes. Meanwhile, broad-spectrum antibiotics were initiated as a precautionary measure for his persistent fever. Furthermore, a flu vaccine was administered to reduce the risk of secondary infections. Concurrently, the diagnostic scope was broadened with imaging studies. An abdominal ultrasound revealed hepatomegaly and the presence of a renal staghorn calculus on the right side, necessitating urology intervention. Simultaneously, a high-resolution computed tomography (HRCT) of the chest was conducted, demonstrating ground glass opacities with atelectatic bands suggestive of pneumonitis. Pulmonology and urology consultations were subsequently obtained to address these findings. The persistence of fever prompted an extensive fever workup, which ultimately returned negative results, eliminating common infectious causes. This comprehensive diagnostic approach aimed to identify the underlying condition responsible for Mr. Ramachandran's symptoms. Diagnosis of CLL: Positive Findings and Criteria: In the evaluation of Mr. Ramachandran's complex clinical presentation, numerous positive findings emerged, ultimately leading to the diagnosis of Chronic Lymphocytic Leukemia (CLL). These findings were instrumental in confirming the presence of CLL, and based on the extent of involvement, Mr. Ramachandran was staged as Rai Stage 3. Mr. Ramachandran's complete blood count (CBC) revealed a significantly elevated total leukocyte count (TLC) of 40,520, a key indicator of CLL.Examination of the peripheral blood smear revealed multiple positive findings. Notably, there were atypical lymphoid blast cells, suggesting an abnormal lymphoid population. Immunophenotyping was advised and subsequently conducted to confirm the diagnosis of CLL. Flow cytometry revealed the characteristic surface marker expression profile, including the presence of CD5, CD19, CD20, and CD23, in line with CLL immunophenotype.Mr. Ramachandran's peripheral blood consistently exhibited an absolute lymphocyte count (ALC) exceeding 5,000 lymphocytes per microliter, indicating lymphocytosis, a hallmark feature of CLL. The morphology of the lymphocytes observed in the peripheral smear was consistent with CLL, featuring small, mature-appearing lymphocytes with dense chromatin.Clinical evaluation revealed symptoms such as abdominal pain, vomiting, loss of appetite, hepatomegaly, and axillary lymphadenopathy, which are often associated with CLL. Comprehensive investigations ruled out other lymphoproliferative disorders or leukemias, ensuring that CLL was the most likely diagnosis. Based on the extent of lymphocytosis and clinical findings, Mr. Ramachandran was staged as Rai Stage 3.


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HAEMATOLOGY AND CLINICAL PATHOLOGY

Name	: Mr RAMACHANDRAN THIRUMALAI	Lab No	: 6781/23
UHID NO	: 12018163451	Requested On	: 15/09/2023 02:03:07 PM
Age / Sex	: 75Y 3M 7D / M DOB : 08/06/1948	Collected On	: 15/09/2023 02:04:57 PM
Ref.By	: RIMC-OUTSOURCE	Reported On	: 15/09/2023 05:37:28 PM
OP/IP	: OP/OP23-137776		

TEST NAME :PERIPHERAL SMEAR STUDY

Methodology: Manual Microscopy; Leishman stain.

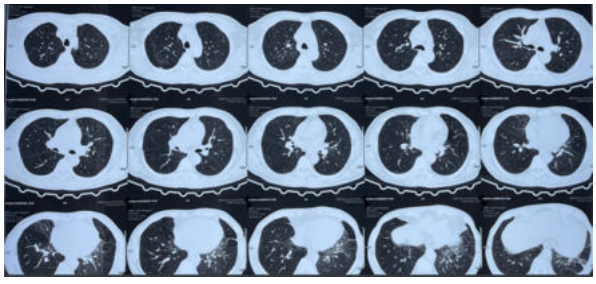
RBC: Normocytic normochromic to hypochromic red blood cells. Few NRBCs are seen.

WBC: Leucocytosis. Neutrophil 38%, Atypical lymphoid / blasts 49%, Myelocyte 08%,

Metamyelocyte 01%, Monocyte 03%, Basophil 01%. nRBCs = 3/100 WBCs.

Platelet: Moderate thrombocytopenia.

IMPRESSION: Bicytopenia with atypical lymphoid / blasts. Immunophenotyping is being advised.



HRCT CHEST

RAI STAGING

The Rai staging system is one of the methods used to classify the extent and severity of CLL. Mr. Ramachandran's classification as Rai Stage 3 signifies a more advanced stage of the disease. Rai staging is based on the following criteria:

Stage 0: Lymphocytosis with a normal lymphocyte count in the blood, but no lymphadenopathy, hepatomegaly, or splenomegaly.
Stage 1: Lymphocytosis with lymphadenopathy.
Stage 2: Lymphocytosis with hepatomegaly or splenomegaly, or both.
Stage 3: Lymphocytosis with anemia (hemoglobin < 11 g/dL).
Stage 4: Lymphocytosis with thrombocytopenia (platelet count < 100,000/μL).

Mr. Ramachandran's classification as Rai Stage 3 indicates the presence of anemia, which is a significant finding impacting both diagnosis and treatment considerations.

In conclusion, the positive findings in Mr. Ramachandran's case, including elevated WBC count, peripheral smear abnormalities, immunophenotyping results, and clinical symptoms, converged to confirm the diagnosis of CLL. Furthermore, the Rai staging system placed him in Stage 3, signifying the advanced nature of his disease. These diagnostic and staging assessments are crucial in guiding the subsequent management and treatment strategies for Mr. Ramachandran's CLL. In summary, diagnosing CLL requires a combination of clinical, hematological, immunophenotypic, and sometimes histopathological findings. A diagnosis is confirmed when these positive criteria align with the characteristic features of CLL, enabling healthcare professionals to differentiate it from other conditions and initiate appropriate management and follow-up care.

CONCLUSIONS

CLL is a heterogeneous disease that can manifest with a wide range of symptoms and clinical findings. Mr. Ramachandran's case highlights the importance of maintaining a high index of suspicion for CLL, especially when patients present with fever, abdominal pain, and lymphadenopathy. Additionally, the case illustrates the necessity of a comprehensive diagnostic approach, including immunophenotyping and imaging studies, to accurately differentiate CLL from other hematological disorders and address concomitant medical issues. Early diagnosis and intervention are crucial in CLL, as the disease is often indolent and asymptomatic in its early stages. Timely treatment can help improve the quality of life and overall survival of CLL patients. Moreover, this case emphasizes the significance of collaboration among different medical specialties to provide optimal care for patients with complex clinical presentations.In conclusion, Mr. Ramachandran's case serves as a valuable reminder of the diagnostic challenges posed by CLL and the need for a holistic, patient-centered approach to address the diverse aspects of this disease.

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