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Micro-dosed Obinutuzumab:

A Novel Debulking Strategy in a Rare Case of Leukostasis from Chronic Lymphocytic Leukemia

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Introduction

Chronic lymphocytic leukemia/small lymphocytic lymphoma (CLL/SLL) represents one of the indolent non-Hodgkin lymphomas portrayed by the progressive accumulation of monoclonal B-lymphocytes. The incidence of leukostasis in CLL is exceptionally rare and is scarcely reported in the literature. Its presence represents a vital clinical importance as it guides treatment and prognosis.

Objective

The main objective of this case study is to describe the unusual incidence of leukostasis in CLL and outline the role of obinutuzumab microdosing in the setting of CLL-associated leukostasis.

Case Presentation

A 61-year-old male with a past medical history of hypertension and diabetes mellitus presents to the outpatient clinic with blurry vision, floaters, and fatigue over the past 3 weeks. He denied any fevers, night sweats, weight loss, nor recurrent infections. The patient was referred to ophthalmology for a retinal exam which demonstrated retinal hemorrhages. Laboratory evaluation was remarkable for worsening leukocytosis with a peak WBC count of 371.7 x 10^9/L with an absolute lymphocyte count of 305 x 10^9/L.

Laboratory Values	Pre-Obinutuzumab	5 weeks post-Obinutuzumab
WBC (x10^9/L)	371.7	6.3
RBC (10^6/µL)	3	3.6
Hgb (g/dL)	9.1	11.2
PLT (10^3/µL)	107	113
ANC (10^3/µL)	4.9	3.7
Abs Lymphocyte (10^3/µL)	82.1	1.9
Abs Monocyte (10^3/µL)	60	0.5
Abs Basophils (10^3/µL)	0.2	0.1
Abs Eosinophils (10^3/µL)	0.4	0.2

Table 1. Patient's laboratory values demonstrating degree of response pre- and post-obinutuzumab
WBC: White Blood Cell Count; RBC: Red Blood Cell Count; Hgb: Hemoglobin; PLT: platelet count; ANC: Absolute Neutrophil Count; Abs: Absolute.

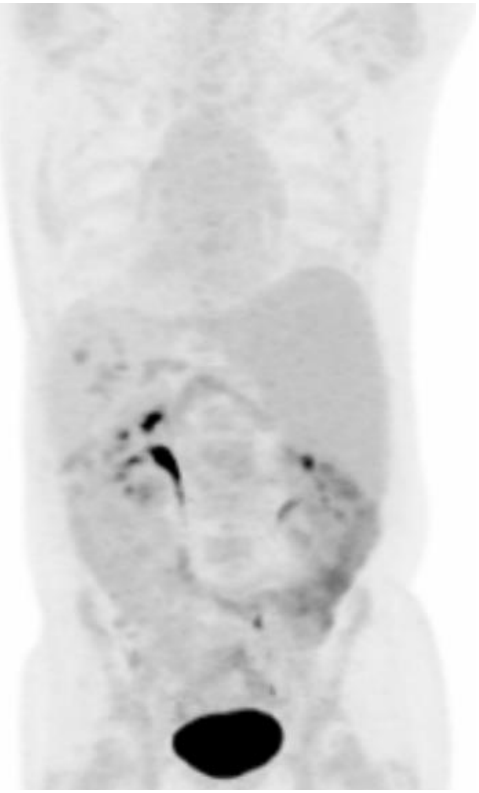

Figure 1. PET/CT performed 2 weeks after completion of Obinutuzumab course demonstrating absence of FDG-avid disease.

Case Presentation (continued)

A flow cytometry was performed confirming CD5 positive monoclonal populations. Other significant laboratory findings include uric acid of 8.0 mg/dL, potassium of 5.8 mEq/L, and an LDH of 499 U/L. Fluorescent in-situ hybridization demonstrated TP53 mutation. In view of the substantial tumor burden, 3 doses of obinutuzumab was pursued, starting at 100 mg intravenously (IV) on day 1, 100mg IV on day 2, followed by 500 mg IV on day 8.

Outcome

After completing the course of obinutuzumab, there was a notable improvement in WBC count to 6.0 x 10^9/L. A positron emission/computed tomography (PET/CT) scan was performed which revealed no fluorodeoxyglucose (FDG) avid neoplasm. The patient was later transitioned to zanubrutinib as a maintenance regimen. The patient reported symptomatic improvements and his WBC count remained stable 5 months later.

Conclusion

This case features the peculiar association of leukostasis and pseudo-hyperkalemia with CLL. It additionally underlines the role of obinutuzumab micro-dosing as part of tumor de-bulking regimen to alleviate the end organ effects associated with leukostasis.