Unmasking Hodgkin-like Features in Mantle Cell Lymphoma After CAR-T: A Case of Composite Lymphoma

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Introduction

Composite lymphomas involving both mantle cell lymphoma (MCL) and Hodgkin like (HL) components are exceedingly rare, their clinical behavior remains poorly understood. Disease evolution and transformation following chimeric antigen receptor T-cell (CAR-T) therapy are not well characterized. We present a case of composite lymphoma with dominant Hodgkin-like transformation after CAR-T therapy for blastic variant MCL. It remains unclear whether this represented a true composite lymphoma from beginning or a phenotypic transformation to HL following CAR-T therapy.

Case Presentation

A 67-year-old male presented with lymphadenopathy and splenomegaly. Lymph node biopsy revealed a CD5+, CD23+ B-cell population suggestive of MCL versus CLL/SLL. FISH analysis confirmed CCND1/IGH rearrangement with cyclin D1 positivity, supporting diagnosis of MCL. A second opinion raised concern for composite lymphoma with a possible Hodgkin component. Based on tumor board discussion, initiated on Nordic-type R-CHOP/DHAP induction followed by CAR-T therapy (Tecartus) after standard Flu/Cy conditioning.
Post-CAR-T imaging showed a partial response. However, approximately five months post-infusion patient developed cytopenias and radiographic disease progression, including retroperitoneal lymphadenopathy. Biopsies of the bone marrow, cervical lymph node, and liver revealed CD30-positive, CD19-negative Hodgkin-like lymphoma.

Concurrent cerebrospinal fluid (CSF) analysis demonstrated residual MCL. Notably, all sites except CSF expressed MCL, suggesting either a transformation from MCL or emergence of a previously underrecognized composite lymphoma.
The patient was treated with CNS-directed intrathecal chemotherapy along with systemic nivolumab and brentuximab vedotin. Brentuximab later discontinued due to neutropenia, he continued on single agent nivolumab. Six months later, PET imaging revealed complete remission (CR) of both MCL and Hodgkin components. A follow-up bone marrow biopsy confirmed ongoing remission.

Discussion

This case highlights two important clinical phenomena: (1) emergence of a Hodgkin-like component following CAR-T therapy for MCL, (2) CNS sanctuary site relapse requiring intrathecal treatment. It remains unclear whether CAR-T therapy contributed to clonal selection or transformation, but this pattern warrants close monitoring.

Conclusion

Composite lymphomas involving MCL pose unique diagnostic and therapeutic challenges. CAR T therapy can play significant role in composite lymphoma and need further studies needed to evaluate its efficacy. Multimodal management and vigilant surveillance are essential in addressing these complex post-CAR-T evolutions.

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