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International Journal of Clinical Case Reports and Reviews

Xiaolei Wei *

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Case Report

Successful Treatment of Plasmablastic Lymphoma with Daratumumab Plus CHOP: A Case Report

Youhai Yuan, Zhixiang Wang, Wejun Huang, Shanshan Zhang, Qi Wei, Xutao Guo, Ru Feng, Yongqiang Wei, Xiaolei Wei*

Department of Hematology, Nanfang Hospital, Southern Medical University, Guangzhou 510515, China

***Corresponding Author:** Xiaolei Wei, Department of Hematology, Nanfang Hospital, Southern Medical University, Guangzhou 510515, China.

Received Date: November 07, 2025 | **Accepted Date:** December 17, 2025 | **Published Date:** JANUARY 02, 2026

Citation: Youhai Yuan, Zhixiang Wang, Wejun Huang, Shanshan Zhang, Qi Wei, et al, (2026), Successful Treatment of Plasmablastic Lymphoma with Daratumumab Plus CHOP: A Case Report, *International Journal of Clinical Case Reports and Reviews*, 33(1); **DOI:10.31579/2690-4861/994.**

Abstract:

Plasmablastic lymphoma (PBL) is a rare and highly aggressive subtype of B-cell lymphoma that lacks standardized treatment. We report a 52-year-old woman who presented with back pain and lower limb weakness. Imaging and biopsy confirmed PBL involving the thoracic vertebra. The patient received daratumumab combined with CHOP chemotherapy followed by autologous stem cell transplantation and daratumumab maintenance, achieving durable complete remission for over 22 months without significant toxicity. This case highlights the potential efficacy of CD38-targeted therapy in newly diagnosed PBL and supports daratumumab plus CHOP as a feasible frontline regimen.

Key words: plasmablastic lymphoma; daratumumab; chop; maintenance

Introduction

Plasmablastic lymphoma (PBL) is a rare and aggressive subtype of diffuse large B-cell lymphoma that shows plasma cell differentiation and is frequently associated with immunodeficiency, particularly HIV and Epstein–Barr virus (EBV) infection. More than 50% of patients harbor MYC rearrangements or amplifications, contributing to its aggressive nature[1]. Conventional chemotherapy regimens often achieve only transient responses, and most patients relapse within months[2-4]. Given its overlapping features with plasma cell neoplasms, novel agents used in multiple myeloma, particularly those targeting CD38, have drawn increasing attention[5, 6]. Here, we report a PBL patient who was successfully treated with daratumumab plus CHOP, followed by autologous stem cell transplantation and daratumumab maintenance, achieving complete remission and prolonged progression-free survival.

Case Presentation

A 52-year-old woman presented with progressive low back pain and bilateral lower limb weakness. Physical examination was notable only for lumbosacral tenderness. Laboratory testing showed an elevated EBV DNA load (6.84×10^3 copies/mL) and mildly increased LDH. PET-CT identified hypermetabolic lesions in the T5 vertebra and multiple lymph nodes (**Figure 1A**).

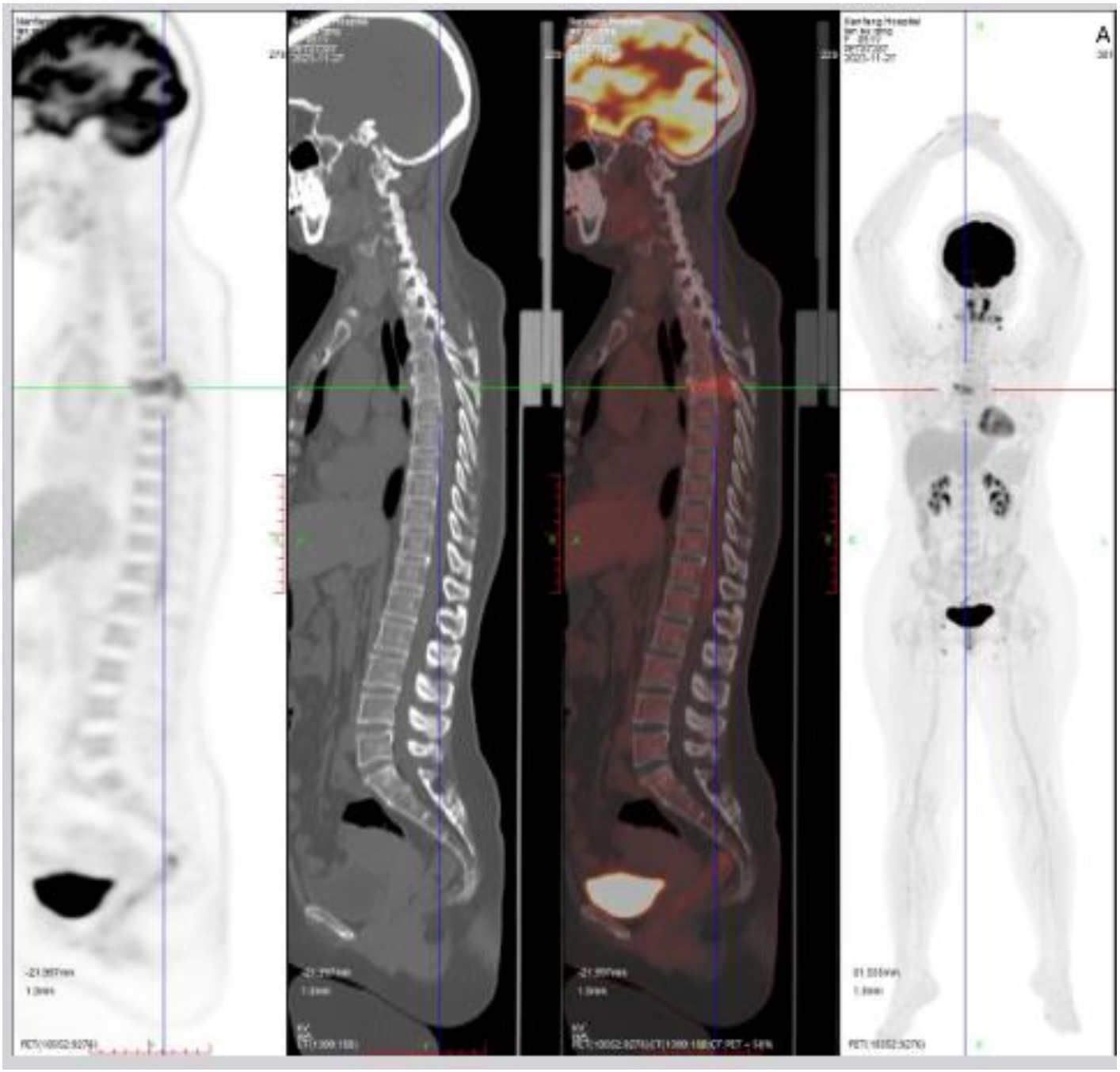
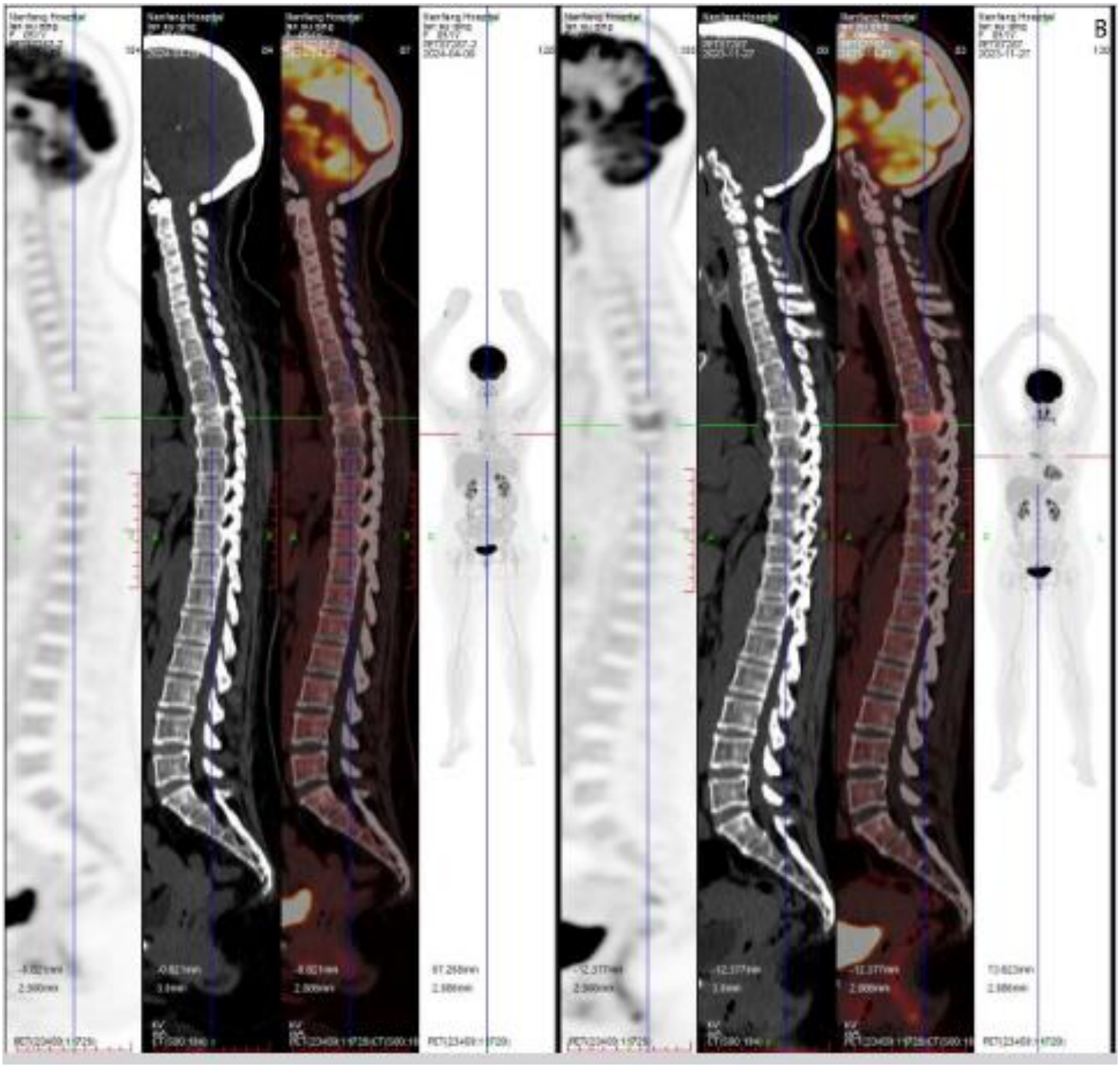


Figure 1: PET/CT findings of the patient with plasmablastic lymphoma
(A) Baseline showing hypermetabolic lesions in T5 and paravertebral regions

Histopathologic analysis of the T5 lesion revealed a diffuse proliferation of medium-sized atypical cells with a plasmacytoid appearance. Immunohistochemistry was positive for CD38, CD138, CD79a, MUM1, and EBER, and negative for CD20 and PAX5, with a Ki-67 index of 90%. These findings confirmed the diagnosis of PBL (Ann Arbor stage IV-A). Bone marrow and cerebrospinal fluid examinations showed no involvement.

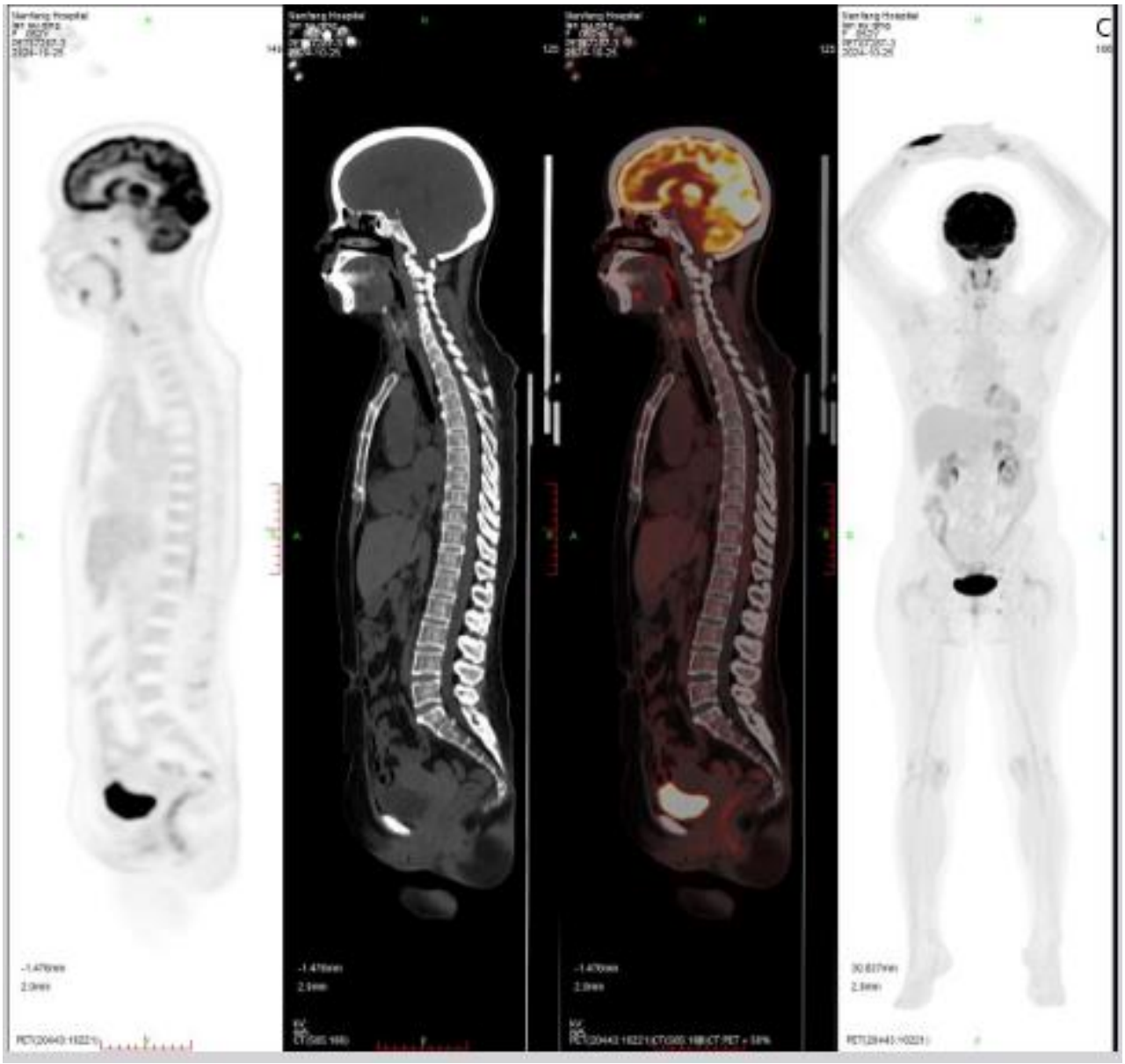
The patient first received palliative radiotherapy to the thoracic spine (IMRT, 36 Gy/12 fractions) for spinal cord compression, followed by systemic chemotherapy with daratumumab plus CHOP (daratumumab 16 mg/kg on day 1; cyclophosphamide, doxorubicin, vincristine on day 1; and prednisone for 5 days). Prophylaxis against viral and Pneumocystis infections was provided.

After four cycles, PET-CT demonstrated complete metabolic remission (**Figure 1B**).



(B) After four cycles of daratumumab plus CHOP, complete metabolic remission

Two additional cycles were administered, followed by autologous stem cell transplantation on July 12, 2024. Three months later, PET-CT confirmed sustained complete remission (**Figure 1C**).



(C) Three months after ASCT, sustained complete remission observed.

The patient has remained disease-free for over 22 months without severe adverse events and is currently receiving maintenance daratumumab every two months under close clinical follow-up.

Discussion

This report highlights the successful application of daratumumab-CHOP as first-line therapy for PBL. The patient's robust and sustained response underscores the potential of incorporating targeted agents into the initial management of this aggressive disease.

Recent large-scale analyses suggest that intensive chemotherapy may not consistently outperform CHOP-like regimens, shifting the focus toward targeted strategies[2]. Daratumumab has demonstrated notable efficacy in relapsed/refractory PBL[7]. Its exploration in the frontline setting, however, is limited. Ryu et al. reported high efficacy with daratumumab-DA-EPOCH but also significant hematologic toxicity[8]. In contrast, our case using daratumumab with the less intensive CHOP backbone achieved a similarly profound complete remission with a more favorable tolerability profile. This suggests that the addition of daratumumab may potentiate the efficacy of standard CHOP, potentially obviating the need for more toxic intensive regimens. Following transplantation, the patient received ongoing daratumumab maintenance therapy, which we believe contributed to sustaining remission by suppressing minimal residual disease. This extended CD38-targeted approach may be a key factor in preventing the early relapses typical of PBL.

Conclusion

This case demonstrates that daratumumab combined with CHOP chemotherapy induced deep remission in this PBL patient, enabling successful autologous transplantation. Post-transplant maintenance with daratumumab likely contributed to sustained disease control. This integrated strategy represents a promising approach for high-risk PBL worthy of further study.

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DOI:10.31579/2690-4861/994