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Novel Therapeutic Approaches in Relapsed/Refractory Multiple Myeloma Following Allogeneic Stem Cell Transplantation: A Case Report

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INTRODUCTION

The introduction of novel agents has significantly improved response rates and survival outcomes in multiple myeloma (MM). In relapsed/refractory settings, allogeneic hematopoietic stem cell transplantation (allo-HSCT) is not routinely recommended; however, it may be considered in selected young patients with high-risk disease (1). Despite advances in treatment options, relapse remains common in patients with multiple myeloma, and the prognosis is particularly poor in refractory disease. Although allo-HSCT represents a potentially curative treatment modality in hematologic malignancies, its role in multiple myeloma is limited due to high post-transplant relapse rates as well as significant transplant-related morbidity and mortality (2).

With the development of novel immunotherapies and targeted agents, therapeutic options for relapsed or refractory multiple myeloma have expanded. In particular, anti-CD38 monoclonal antibodies and next-generation T-cell–redirecting therapies have shown promising results (3,4). Agents such as isatuximab, elranatamab, and talquetamab may provide effective treatment alternatives even in heavily pretreated patients (3,4).

In this case report, we aimed to present our clinical experience regarding the use of currently available treatment options in a patient with relapsed/refractory multiple myeloma who developed relapse after multiple lines of therapy and allo-HSCT.

CASE PRESENTATION

A 58-year-old female patient was admitted to our clinic in 2023 with complaints of weight loss and low back pain. At presentation, laboratory findings were as follows: corrected calcium 13.65 mg/dL, total protein 132.62 g/L, albumin 27.61 g/L, beta-2 microglobulin 5.52 mg/L, creatinine 0.98 mg/dL, hemoglobin 8.7 g/dL, white blood cell count 7.59 K/µL, platelet count 237 K/µL, and erythrocyte sedimentation rate 99 mm/hour. The patient was hospitalized with a preliminary diagnosis of multiple myeloma.

Bone marrow aspiration and biopsy were consistent with plasma cell myeloma. Urine immunofixation electrophoresis showed no evidence of gammopathy. Serum immunofixation electrophoresis revealed an IgG kappa monoclonal band. At diagnosis, the patient was classified as ISS stage II and R-ISS stage II. FDG-PET imaging demonstrated lytic lesions in the skeletal system, consistent with multiple myeloma.

On 04.08.2023, treatment with the VCD regimen (bortezomib, cyclophosphamide, dexamethasone) and bisphosphonate therapy was initiated. After one cycle of VCD, therapy was continued with the VRD regimen (bortezomib, lenalidomide, dexamethasone). Following one cycle of VRD, bone marrow evaluation revealed 90% plasma cell infiltration; therefore, treatment was switched to the KRD regimen (carfilzomib, lenalidomide, dexamethasone). After KRD therapy, repeat bone marrow examination showed 95% plasma cell infiltration. On 12.11.2023, treatment was changed to the DARA-VTD PACE regimen (daratumumab, cisplatin, cyclophosphamide, dexamethasone, doxorubicin, etoposide, thalidomide).

After four cycles of DARA-VTD PACE, bone marrow biopsy demonstrated CD38- and CD138-positive plasma cells at a rate of approximately 10–20% overall, reaching up to 80% in several focal areas. With off-label approval, treatment was switched to the DARA-VPD PACE regimen on 18.04.2024. After two cycles of this regimen, the patient was referred to a transplant center for planned allogeneic hematopoietic stem cell transplantation.

Allogeneic hematopoietic stem cell transplantation was performed on 12.07.2024.
[You may add conditioning regimen, donor type, engraftment data, GVHD status, and post-transplant course here.]

The patient re-presented to our clinic in December 2025. At that time, laboratory findings were as follows: corrected calcium 9.38 mg/dL, total protein 108.33 g/L, albumin 42.57 g/L, beta-2 microglobulin 3.08 mg/L, creatinine 0.62 mg/dL, hemoglobin 12.5 g/dL, white blood cell count 6.05 K/µL, platelet count 189 K/µL, and erythrocyte sedimentation rate 28 mm/hour. Bone marrow biopsy was performed with a preliminary diagnosis of relapsed multiple myeloma and was consistent with plasma cell myeloma. Serum immunofixation electrophoresis detected an IgG kappa monoclonal band, while urine immunofixation electrophoresis showed no gammopathy. FDG-PET imaging demonstrated widespread lytic lesions in the skeletal system, which were evaluated as disease progression compared to previous imaging.

In January 2026, treatment with isatuximab, pomalidomide, and dexamethasone was initiated. The patient is currently under treatment and follow-up in our clinic.

CONCLUSION

With the introduction of novel agents, treatment options for relapsed/refractory multiple myeloma continue to expand. Even in patients who develop relapse after multiple lines of therapy and allogeneic hematopoietic stem cell transplantation, immunotherapies and next-generation targeted agents may provide effective therapeutic alternatives.

This case demonstrates that currently available treatment options can still play a significant role in disease control, even in relapse following advanced treatment modalities. Individualized treatment strategies and the integration of novel agents have the potential to improve clinical outcomes in relapsed/refractory multiple myeloma.

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