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Pomalidomide, cyclophosphamide, and dexamethasone in relapsed/refractory multiple myeloma: A single-center experience

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INTRODUCTION

Treatment of multiple myeloma (MM) has undergone remarkable advances over the past decade, leading to a significant improvement in patient survival with the introduction of novel therapeutic agents, including immunomodulatory drugs (IMiDs), proteasome inhibitors (PIs), monoclonal antibodies (MAs), and bispecific monoclonal antibodies. Despite these advances, MM remains an incurable disease, and the majority of patients eventually experience relapse and develop resistance to available therapies. In particular, the widespread use of lenalidomide in first-line treatment has resulted in an increasing proportion of patients developing lenalidomide resistance at earlier stages of the disease. Although combinations of monoclonal antibodies with PIs or IMiDs provide therapeutic options for this challenging patient population, progression-free survival (PFS) after one to three lines of therapy continues to decline, underscoring the need for novel and effective treatment strategies. Pomalidomide, a third-generation IMiDs, exhibits enhanced anti-myeloma, anti-inflammatory, and immunomodulatory activity compared with thalidomide and lenalidomide. Cyclophosphamide, an alkylating agent, remains a cornerstone in the treatment of MM. Encouraging clinical outcomes have been reported with the combination of pomalidomide, cyclophosphamide, and dexamethasone (PCD), establishing it as a viable therapeutic option for patients with relapsed/refractory MM (R/R MM). In this study, we aimed to evaluate and present the clinical outcomes of PCD combination therapy in our cohort of patients with R/R MM.

METHODS

This retrospective study included 27 patients diagnosed with relapsed/refractory MM who received a combination therapy of PCd between May 2021 and February 2026. Demographic characteristics of the patients, ISS/R-ISS stages, number of prior lines of therapy, refractoriness to previous treatments, transplantation status, number of PCd cycles administered, treatment response, hematologic and non-hematologic adverse events, as well as post-treatment overall survival (OS) and progression-free survival (PFS) were evaluated. A 28-day cycle, patients received pomalidomide at 4 mg orally on days 1 to 21, oral cyclophosphamide 50 mg daily on days 1 to 21, dexamethasone 40 mg (20 mg if age ≥ 75 years) orally on days 1, 8, 15, and 22. Dose reduction was performed in cases of hematologic toxicity. Antithrombotic prophylaxis comprised low-dose aspirin or low-molecular-weight heparin according to the thrombotic risk. Response was assessed according to the International Myeloma Working Group (IMWG) Criteria. PFS was defined as the interval from treatment initiation to the earlier of either disease progression or death. OS was defined as the time from the start of treatment until death. Toxicities were characterized and graded according to the National Cancer Institute Common Terminology Criteria for Adverse Events v 5.0.

RESULTS

Of the patients, 20 were male, and the median age at treatment initiation was 68 years (range, 52–78). Twenty-one patients had IgG, 2 had IgA, and 4 had lambda light chain type disease. According to the ISS staging system, 2 patients were stage I, 7 were stage II, and 15 were stage III. Based on the R-ISS, 1 patient was stage I, 8 were stage II, and 2 were stage III, while cytogenetic evaluation could not be performed in 16 patients. The median time from diagnosis to initiation of treatment was 16 months (range, 3–84). The median number of prior lines of therapy before PCd was 3 (range, 1–7), and 19 patients had undergone autologous stem cell transplantation. Lenalidomide refractoriness was present in 37% of the patients. A median of 2 PCd cycles (range, 1–18) was administered to the patients.

In response assessment, 1 patient achieved a very good partial response, 6 patients had a partial response, 4 patients had stable disease, and 6 patients had refractory/progressive disease. Five patients died before response evaluation could be performed. The overall response rate was observed to be 25.9%. Median progression-free survival and overall survival were 3.0 months (range, 0–43) and 13 months (range, 0–43), respectively.

Hematologic adverse events were observed in 11 patients, including grade ≥ 2 neutropenia in 9 patients, thrombocytopenia in 2 patients, and anemia in 1 patient. Non-hematologic adverse events were observed in 10 patients, most commonly fatigue, nausea/vomiting, diarrhea, and skin reactions. Thromboembolic events developed in 2 patients. Treatment was discontinued due to adverse events in 4 patients. At present, only 1 patient continues treatment with a very good partial response.

CONCLUSION

As bortezomib and/or lenalidomide have become widely adopted as standard therapies in the induction setting and at early relapse, pomalidomide-based combinations are now well-established options for patients with R/R MM. The PCd regimen, in particular, stands out as a valuable alternative therapeutic strategy in this setting, with the added advantage of oral administration contributing to its ease of use. In the literature, this regimen has demonstrated an overall response rate of approximately 50% and a median progression-free survival of around 11 months. Consistent with these findings, our study also showed acceptable outcomes, despite the regimen being predominantly used in heavily pretreated and multi-refractory patients. In conclusion, the PCd triplet regimen is an effective and practical treatment option for patients with R/R MM.

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