

## Myeloma Case Study

Jeanne is a 68-year-old female who presented to the nurse practitioner, complaining of fatigue that has been worsening in the last few weeks and lower back pain that had gotten “terribly worse” in the last few days. She had always complained of “arthritis in my back,” relieved by using acetaminophen and rest, but she now rated her pain a “9/10.” She had no other complaints, except for back spasms, and insomnia from pain. She recalled no trauma. She had no health concerns.

On physical examination, she appeared pale. She had point tenderness to her lower thoracic spine on examination. She had no weakness in her legs. A chemistry panel and CBC were ordered, as well as a urinalysis due to the back pain.

The CBC revealed anemia with a hemoglobin 8.9 g/dL (range 12-15 g/dL). Her serum creatinine was 1.3 mg/dL (range 0.5-1.4 mg/dL), and her serum total protein was elevated to 10.1 g/dL (range 6.0-8.4 g/dL). Based on the elevated protein, a serum protein electrophoresis was subsequently ordered and showed an IgG kappa monoclonal spike of 2.4 g/dL (normally not observed). Urinalysis revealed significant proteinuria, and a subsequent urine protein electrophoresis with immunofixation showed a small IgG kappa monoclonal spike. She was referred to hematology for complete evaluation. Serum beta-2 microglobulin was 5.6 mg/L (range 0.3-1.9 mg/L), and albumin was 3.6 g/dL (range 3.5-5.0 mg/dL).

On evaluation, her bone marrow aspiration and biopsy revealed 60% plasma cells in sheets and clusters. No cytogenetic abnormalities were found. Complete skeletal survey showed multiple scattered “lytic” lesions on her femurs, generalized osteopenia, and compressed vertebrae at T9 and T10 vertebral bodies. MRI of the

thoracic and lumbar spine confirmed an acute vertebral compression fracture at T9 and T10 with an intact spinal cord, but also showed a soft tissue tumor plasmacytoma at L2. She qualifies for a diagnosis of multiple myeloma (MM) stage I disease by International Staging System (ISS) criteria (Greipp, 2005).

Given the above information, it is important for nurses to understand the many factors to consider in the management of this woman with newly diagnosed MM and supportive care strategies critical to her success.

Based on the above case study, what would you recommend for initial therapy in this 68-year-old?

- 1) Thalidomide + high-dose dexamethasone
- 2) Lenalidomide + high-dose dexamethasone
- 3) Lenalidomide + low-dose dexamethasone
- 4) Bortezomib + melphalan and prednisone
- 5) Either 3 or 4 is appropriate

**ANSWER: 5. Rationale:**

3) *Lenalidomide and low-dose dexamethasone*

Lenalidomide is an oral immunomodulatory agent and has been studied extensively in patients with relapsed MM and in several newly diagnosed MM trials. In a recent cooperative group trial, patients were randomized to lenalidomide 25 mg PO daily for 21 days with either high-dose dexamethasone (40 mg/d on days 1-4, 9-12, and 17-20 of a 28-day cycle) or low-dose dexamethasone (40 mg/d on days 1, 8, 15, and 22 of a 28-day cycle). Differences in overall survival (OS) favored the low-dose dexamethasone arm. Subgroup analysis of individuals at age 65 or older showed patients over the age of 65 benefitted most from lower doses of steroids in combination with lenalidomide in terms of better 1-year survival rates and fewer infections (Rajkumar et al, 2008).

4) *Bortezomib, melphalan, and prednisone*

This regimen, approved by the Food and Drug Administration, can be given to patients who are not candidates for transplant. Caution must be taken in selecting this regimen, as alkylating agents, such as melphalan, will impair the ability to harvest stem cells for transplant. Therefore, one must harvest stem cells before embarking on prolonged doses of melphalan or avoid this agent all together if a future transplant is planned.in the future. In this case, Jeanne does not want to pursue transplant and this regimen can be considered.

In terms of efficacy, a phase III clinical trial known as the VISTA (Velcade as Initial Standard Therapy in Multiple Myeloma: Assessment With Melphalan and Prednisone) trial, 682 patients were randomly assigned to receive nine 6-week cycles of

melphalan (9 mg per square meter [ $\text{mg}/\text{m}^2$ ] of body surface area) and prednisone (60  $\text{mg}/\text{m}^2$ ) on days 1 to 4. MP was given to patients, either by itself or in combination with bortezomib (1.3  $\text{mg}/\text{m}^2$ ) on days 1, 4, 8, 11, 22, 25, 29, and 32 of a 42-day cycle. The results of this randomized, controlled trial showed that the combination of bortezomib plus MP was superior to MP alone, as 71% of patients had at least a partial response to therapy compared to 35% of patients receiving MP. This was one of the first combinations to improve survival in patients with MM and is considered an active regimen for patients who do not wish to pursue transplant (San Miguel et al, 2008).

As for thalidomide and lenalidomide (choices 1 and 2), each can be considered; however, dexamethasone in high doses is not well tolerated in patients over the age of 65. Hence, thalidomide and lenalidomide in combination with high-dose dexamethasone is contraindicated (Ludwig et al, 2009).

Jeanne starts on therapy with lenalidomide 25 mg on days 1 to 21, and low-dose dexamethasone 40 mg weekly on days 1, 8, 15, and 22. She continues on lenalidomide and weekly dexamethasone and continues to be in remission.

## References

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Ludwig H, Hajek R, Tothova E, et al. Thalidomide-dexamethasone compared with melphalan-prednisolone in elderly patients with multiple myeloma. *Blood*. 2009;113:3435-3442.

Rajkumar SV, Jacobus S, Callander N, et al. Randomized trial of lenalidomide plus high-dose dexamethasone versus lenalidomide plus low-dose dexamethasone in newly diagnosed myeloma (E4A03), a trial coordinated by the Eastern Cooperative Oncology Group: analysis of response, survival, and outcome wi. *J Clin Oncol (Meeting Abstracts)*, 26(15\_suppl). Abstract 8504.

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