Initial Therapy for Patients with Multiple Myeloma Eligible for Transplant

A Case Study

Case Study

- Mr. K is a 63-year-old Caucasian male with no past medical history except for well controlled hypertension
- The patient tripped and developed a vertebral compression fracture.
- He was evaluated for kyphoplasty and was found to have lytic bone lesions
- Diagnosed with multiple myeloma with 21% plasma cells in bone marrow, 4.3 g/dL IgG λ M-protein, and bone lesions. Cytogenetics positive for t(11;14)
- Based upon his age, performance status, and comorbidities, Mr. K is a candidate for autologous stem cell transplant

What are the initial myeloma therapy options for Mr. K?

Work-up for Suspected Multiple Myeloma

History and physical examination	
Blood	• **CBC with differential** • **Basic metabolic panel including, BUN, creatinine, electrolytes, calcium, albumin, lactate dehydrogenase (LDH)** • **Serum quantitative immunoglobulins** • **Serum protein electrophoresis and immunofixation (SPEP)** • **β_2-microglobulin** • **Serum free light chain analysis**
Urine	• **24-hr protein** • **Protein electrophoresis with immunofixation (UPEP)**
Bone Marrow	• **Unilateral bone marrow aspirate and biopsy evaluation with immunohistochemistry or flow cytometry, cytogenetics, and FISH**
Imaging	• **Skeletal survey** • **MRI and PET/CT as clinically indicated**

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Case Study: Laboratory Values

Lab/Normal Reference Range	Value
WBC 3.0–11.0 k/µL	**11.3(H)**
Plt Ct 150–400 k/µL	**127(L)**
Hgb 13.0–17.0 g/dL	**8.2(L)**
Hct 39.0–51.0%	**24.6(L)**
MCV 80–100 fL	89.7
RDW-CV 11.5–15.0%	16.4
Neut % 38.5–75.0%	**83(H)**
Abs Neut 1.00–7.50 k/µL	**9.4(H)**

Lab/Normal Reference Range	Value
BUN 8–25 mg/dL	21
Creatinine 0.7–1.4 mg/dL	1.2
Calcium 8.5–10.5 mg/dL	8.9
Albumin 3.5–5.0 g/dL	**2.8(L)**
Alk Phos 40–150 U/L	**263(H)**
ß2 microglobulin 0.1-0.14 g/dl	3.8g/dl

WBC = white blood cell, Plt Ct = platelet count, Hgb = hemoglobin, Hct= hematocrit, MCV = mean corpuscular volume, RDW-CV = red cell distribution width–coefficient variation, Neut = neutrophils, Abs Neut = absolute neutrophils, BUN = blood urea nitrogen, Alk Phos = alkaline phosphatase

Case Study: Laboratory Values (cont.)

SPEP: Lab/Normal Reference Range	Value
Alpha-1 0.11–0.22 g/dL	0.18
Alpha-2 Globulin 0.6–1 g/dL	0.8
Beta G 0.50–1.00 g/dL	4.1
Gamma Glob 0.60–1.35 g/dL	0.29
M-Spike (g/dL)	2.5

Lab/Normal Reference Range	Value
Serum IgG 717–1,411 mg/dL	4300
Serum IgA 78–391 mg/dL	27
Serum IgM 53–334 mg/dL	12
Serum Kappa 534–1,267 mg/dL	364
Serum Lambda 253–653 mg/dL	73200

SPEP = serum protein electrophoresis; Gamma Glob = gamma globulin

Possible Regimens for Patients Eligible for Transplant

NCCN Preferred Regimens (Category 1)
Bortezomib/dexamethasone
Bortezomib/doxorubicin/dexamethasone
Bortezomib/thalidomide/dexamethasone
Lenalidomide/dexamethasone
Category 2A recommendations
Bortezomib/cyclophosphamide/dexamethasone
Bortezomib/lenalidomide/dexamethasone

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Risk-Stratification for Multiple Myeloma

Standard-risk

1. Trisomies (hyperdiploidy)
2. t(11;14) ← Mr. K had 30% t(11;14) by FISH
3. t(6;14)

B. Intermediate-risk

1. t(4;14)

C. High-risk

1. 17p deletion
2. t(14;16)
3. t(14;20)
4. High-risk gene expression profiling signature (unless trisomies are present, then standard risk)

Mr. K has standard risk multiple myeloma.

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Approach to Initial Treatment Plan By Risk Stratification

Risk	Initial Treatment	Transplant
High	Bortezomib/lenalidomide-based	After 4 cycles
Intermediate	Bortezomib/cyclophosphamide-based	After 4 cycles
Standard	Lenalidomide-based	After 4 cycles or delay

Mr. K has standard risk ISS stage II myeloma and could initially receive 4 cycles of lenalidomide and dexamethasone or bortezomib and dexamethasone.

Note: If lenalidomide is given, stem cells should be collected within 4 cycles

Discuss ASCT with patient including upfront option and delayed. Even in instances of delayed transplant, consider PBSL collection following induction therapy. No extended treatment should be implemented that will compromise collection as a later date should collection be postponed.

ASCT – Autologous Stem Cell Transplant

PBSL- Peripheral Blood Stem Cells

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