

# Outcome of Patients With Nonsecretory Multiple Myeloma After Autologous Hematopoietic Stem Cell Transplantation

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## Abstract

**We report the outcomes of patients with nonsecretory multiple myeloma (NSM) who were treated with autologous hematopoietic stem cell transplantation (auto-HCT) compared with a matched cohort with secretory myeloma (SM). Our results showed that auto-HCT is an effective intervention for NSM patients with comparable outcomes in patients with SM.**

**Introduction:** Fewer than 5% of patients have nonsecretory multiple myeloma (NSM), which is characterized by the absence of monoclonal protein in immunofixation in serum and urine. There are limited data on the outcome of NSM after autologous hematopoietic stem cell transplantation (auto-HCT). **Patients and Methods:** Between 1988 and December 2010, we identified 31 patients with NSM, and compared their outcome with 124 patients with secretory myeloma (SM) who were matched for age, disease stage, year of auto-HCT, and disease status and received auto-HCT at our institution. The primary end points were time to progression (TTP), progression-free survival (PFS), and overall survival (OS). **Results:** Nonrelapse mortality at 4 years was 4% and 4% in the NSM and SM patients, respectively ( $P = .612$ ). Median follow-up was 102 and 74 months for NSM and SM patients, respectively. Median PFS was 37 (95% confidence interval [CI], 12-62) and 22 (95% CI, 18-26) months for NSM and SM patients, respectively ( $P = .527$ ). Median OS was 51 (95% CI, 7-95) and 73 (95% CI, 59-86) months for NSM and SM patients, respectively ( $P = .740$ ). In multivariate analyses, age >55 years, and relapsed disease were associated with a shorter TTP. Similarly, age >55 years, and relapsed or refractory disease at the time of auto-HCT were associated with a shorter OS. **Conclusion:** Auto-HCT is associated with durable remission in NSM. There was no significant difference in transplant-related mortality, TTP, and PFS in patients with NSM compared with patients with SM after high-dose therapy and auto-HCT.

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**Keywords:** Autologous stem cell transplant, Nonsecretory myeloma, Overall survival, Progression-free survival, Response

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## Introduction

Nonsecretory multiple myeloma (NSM) is a rare variant of multiple myeloma (MM) and comprises approximately <5% of all patients.<sup>1-5</sup> NSM is defined as the presence of a monoclonal plasma cell population in bone marrow (BM) biopsy, presence of end-organ damage due to underlying plasma cell disorder, and the absence of a detectable serum or urine monoclonal protein in immunofixation electrophoresis. In approximately 70% of patients previously diagnosed with NSM, a monoclonal free light chain (FLC) can be detected in the serum using the FLC assay.<sup>6</sup> With this advancement

**Table 1 Patient Characteristics**

Characteristic	NSM (n = 31)	SM (n = 124)	P
<b>Male Sex</b>	19 (61)	83 (67)	.553
<b>At Diagnosis, Median (Range)</b>			
Bone marrow plasma cell, % <sup>a</sup>	25 (0-98)	33.5 (0-100)	.477
Lactate dehydrogenase, IU/L	213 (96-552)	342.5 (44-2740)	.312
Lactate dehydrogenase unknown, %	18 (58)	64 (52)	.520
Creatinine, mg/dL	1.0 (0.5-2.7)	1.1 (0.5-7.0)	.187
β-2-microglobulin, mg/L	2.5 (1-12)	3.1 (1-19)	.243
β-2-microglobulin unknown, %	15 (48)	35 (28)	.032
<b>Durie-Salmon Stage at Time of Diagnosis, n (%)</b>			
I	3 (10)	12 (10)	1.000
II	13 (42)	52 (42)	
III	15 (48)	60 (48)	
<b>International Staging System Classification at Time of diagnosis, n (%)</b>			
I	8 (26)	33 (27)	.181
II	3 (10)	22 (18)	
III	3 (10)	25 (20)	
Unknown	17 (55)	44 (36)	
<b>Creatinine &gt; 2 mg/dL at Time of Diagnosis, n (%)</b>	2 (8)	14 (12)	.609
<b>Median Months From Time of Diagnosis to Auto-HCT</b>	7.1 (2.7-138.3)	8.1 (2.5-122.5)	.918
<b>Cytogenetic Risk at the Time of Diagnosis, n (%)</b>			
Standard risk	17 (55)	80 (65)	.193
High risk	2 (7)	15 (12)	
Unknown	12 (39)	29 (23)	
<b>Induction Chemotherapy, n (%)</b>			
Proteasome inhibitor-based	4 (13)	34 (27)	.093
Immunomodulatory drug-based	11 (36)	59 (48)	.226
<b>Median Age at Time of Auto-HCT</b>	52 (34-68)	52.5 (32-71)	.929
<b>Disease Status, n (%)</b>			
First remission consolidation	19 (61)	78 (63)	.493
Primary refractory	4 (13)	24 (19)	
Relapse	8 (26)	22 (18)	
<b>KPS ≥ 70% at Time of Auto-HCT</b>	15 (100)	78 (99)	.661
<b>Missing KPS at Time of Auto-HCT</b>	16 (52)	45 (36)	
<b>Median Number of Previous Regimens at Time of Auto-SCT</b>	1 (0-8)	1 (0-9)	.555
<b>Response to Previous Therapy at Time of Auto-HCT, n (%)</b>			
CR + sCR	8 (26)	19 (15)	.372
VGPR	N/A	6 (5)	
PR	12 (39)	63 (51)	
< PR	12 (39)	63 (51)	
PD	4 (13)	8 (7)	
<b>Preparative Regimen, n (%)</b>			
Melphalan alone	17 (55)	71 (57)	.808
<b>Year of Auto-HCT, n (%)</b>			
Before 1995	17 (55)	42 (34)	.052
1995-2002	10 (32)	70 (57)	
2003-2010	4 (13)	12 (10)	

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