Conference Abstracts

Multiple Myeloma Patients Treated at Academic Centers have Improved Survival Outcomes

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	All		Academic		NonAcademic		P value*
	N	%	N	%	N	%	
All	179769	-	76287	42.4%	103482	57.6%	p<0.05
Sex							
M	98351	54.7%	41988	55.0%	56363	54.5%	p<0.05
F	81418	45.3%	34299	45.0%	47119	45.5%	p<0.05
Age (years)	Mean= 67.3		M= 64.7		M=69.2		p<0.05 [†]
<65	73317	40.8%	38425	50.4%	34892	33.7%	p<0.05
65-74	54193	30.1%	22408	29.4%	31785	30.7%	p<0.05
>75	52259	29.1%	15454	20.3%	36805	35.6%	p<0.05
Race							
White	135283	75.3%	54074	70.9%	81209	78.5%	p<0.05
Black	36507	20.3%	17914	23.5%	18593	18.0%	p<0.05
Other	7979	4.4%	4299	5.6%	3680	3.6%	p<0.05
Insurance							
Private	62343	34.7%	31679	41.5%	30664	29.6%	p<0.05
Medicare	96660	53.8%	33782	44.3%	62878	60.8%	p<0.05
Medicaid	11751	6.5%	6024	7.9%	5727	5.5%	p<0.05
None	9015	5.0%	4802	6.3%	4213	4.1%	p<0.05
Time to Treatment (days)	Mean= 28.67		Mean= 31.4		Mean= 26.56		p<0.05 [†]
Radiation	35415	19.7%	13694	18.0%	21721	21.0%	p<0.05
Auto Transplant	7013	3.9%	4739	6.3%	2274	2.2%	p<0.05
Clinical Trial	495	0.3%	393	0.5%	102	0.1%	p<0.05

Table 1. Demographics and treatment characteristics

* P value for difference in column proportion between Academic and Non-academic centers (z-test), unless otherwise specified; † variance of means by independent t-test

BACKGROUND

Treatment at academic cancer centers (ACs) has been associated with improved outcomes across hematologic malignancies. ACs offer the benefit of high treatment volume in addition to enrollment in clinical trials and expanded access to diagnostic and treatment-related services. This is the most extensive study to date examining the benefit of academic centers in multiple myeloma (MM).

METHODS

The National Cancer Database was utilized to obtain data on patients diagnosed with MM between 2004- 2017. Patients treated at ACs were compared to those treated at non-academic centers (NACs).

RESULTS

Of the 179,769 MM patients available, 42.4% were treated at ACs (p<0.05). Patients treated at ACs were younger than those treated at NACs (mean age 64.7 years vs. 69.2 years, p<0.05). ACs were more likely to treat Black and other minority patients, with Black patients representing 23.5% vs. 18%, and other minorities 5.6% vs. 3.6% of patients treated at ACs vs. NACs; p<0.05. Academic centers were more likely to treat uninsured patients (6.3% vs. 4.1%), patients on Medicaid (7.9% vs. 5.5%) as well as privately insured patients (41.5% vs. 29.6%), (all p<0.05).

Median OS at ACs was longer than at NACs, with a median OS of 67.8 months (95% CI 66.89-68.79 months) compared to 38.6 months (95% CI 38.15-39.13 months) at NACs, p<0.05. When adjusted for age, gender, race, insurance, time to treatment, and use of autologous transplant on Cox

Kaplan Meier Analysis	Median (months)	95% CI		p value*
		Lower	Upper	
All	49.6	49.13	50.09	<0.001
Academic	67.84	66.89	68.79	
Non-Academic	38.64	38.15	39.13	
	1 yr	5 yr	10 yr	<0.001
	67%	39%	16%	
	75%	48%	22%	
Non-Academic	61%	33%	12%	

Table 2. Survival Analysis

* P value by pairwise Log rank for survival between academic and non-academic centers

Fig 1. Kaplan Meier Survival Analysis

Regression analysis, the improvement in OS remained. Patients treated at AC had a hazard ratio of 0.77 for all-cause mortality (95% CI 0.756-0.784) referenced to NACs on multivariate analysis ($p < 0.05$).

CONCLUSIONS

Patients with multiple myeloma had significantly improved survival when treated at academic centers compared to other facility types. The improvement in OS remained when controlled for available treatment and demographic features.

	Univariate Analysis					Multivariate Analysis			
	HR	95% CI		p value		HR	95% CI		p value
Facility Type									
Non-Academic	*	*	*			*	*	*	
Academic	0.633	0.625	0.642	<0.001		0.770	0.756	0.784	<0.001
Sex									
M	*	*	*			*	*	*	
F	0.948	0.936	0.960	<0.001		0.811	0.896	0.928	<0.001
Age (years)	1.048	1.047	1.048	<0.001		1.040	1.039	1.041	<0.001
Race									
White	*	*	*			*	*	*	
Black	0.909	0.894	0.924	<0.001		1.035	1.013	1.058	0.002
Other	0.764	0.738	0.791	<0.001		0.897	0.856	0.940	<0.001
Insurance									
Private	0.664	0.644	0.684	<0.001		0.718	0.690	0.747	<0.001
Medicare	1.399	1.359	1.441	<0.001		0.845	0.813	0.879	<0.001
Medicaid	0.929	0.893	0.966	<0.001		1.017	0.968	1.069	0.503
None	*	*	*			*	*	*	
Time to Treatment (days)	0.988	0.997	0.998	<0.001		0.998	0.998	0.998	<0.001
Auto Transplant	1.144	1.113	1.176	<0.001		2.261	1.700	3.006	<0.001

Table 3. Cox regression survival analysis

* Reference variable

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