Disparities in First-line Treatment of Elderly Patients with Hodgkin Lymphoma: An Analysis of Surveillance, Epidemiology and End Results (SEER)-Medicare Data

Angie Mae Rodday, Theresa Hahn, Peter K Lindenauer, Jonathan Friedberg, Andrew M Evens, Susan K Parsons

Tufts CTSI Tufts Clinical and Translational Science Institute

Background

•Hodgkin lymphoma (HL) is a blood cancer with a bimodal age distribution at adolescence/young adulthood and older adulthood

•HL is highly curable with multi-agent chemotherapy in younger patients, especially those with earlier stage disease

•Older patients have higher rates of treatment failure and death, which may reflect different treatment approaches due to disease, risk of toxicity, comorbidities, or disparities in care

Methods

•Retrospective cohort study of SEER-Medicare data (1999-2014) linked to Area Health Resource Files

Sample

•Cohort was defined based on patient age, year of diagnosis, HL diagnosis, Medicare eligibility, and other relevant criteria for the analysis

Variables

•Treatment was determined from inpatient, outpatient, and physician/supplier claims using chemotherapy J-codes, HCPCS codes, and DRG codes

•Pre-existing frailty and comorbidity ≤6 months prior to diagnosis were separately defined using validated claims-based algorithms

•First-line treatment within 4 months of diagnosis was categorized as (1) full established standard chemotherapy regimen, (2) any other treatment (e.g., partial established regimen, radiotherapy, single drug, novel agent), and (3) no treatment

Analysis

•Multinomial logistic regression estimated odds ratios (OR) and 95% confidence intervals (CI) of first-line treatment (reference = full established chemotherapy regimen)

•Unadjusted models were fit for personal and health area factors

•Adjusted models were fit that included personal and health area factors, as well as disease factors

Objectives

•Determine whether sociodemographic or system factors influence first-line treatment in elderly patients with HL, adjusting for disease characteristics

Results

Table 1. Cohort Characteristics, n=2825

Patient Characteristics	
Age in years, m (SD)	76 (7)
Female	50%
Race/ethnicity	
White, non-Hispanic	84%
Hispanic	8%
Other race, non-Hispanic	8%
Medicaid dual enrollment	14%
Frailty	51%
Any comorbidity	79%
Year of diagnosis	
2000-2004	32%
2005-2009	40%
2010-2013	28%
Stage	
Early	47%
Advanced	53%
Health Area Characteristics	
Region	
Northeast	23%
Midwest	14%
South	24%
West	39%
Rural/less urban	12%
Hospital with chemotherapy in health service area	96%
First-line Treatment	
First-line Treatment	
Full established regimen	41%
Other treatment	34%
No treatment	25%

Results

Table 2. Unadjusted & Adjusted Multinomial Regression Models (ref = Full chemotherapy regimen)

	Unadjusted OR (95% CI)		Adjusted OR (95% CI)	
	Other treatment	No Treatment	Other treatment	No Treatment
Patient Factors				
Age at diagnosis (per 5 y)	**1.36 (1.28, 1.46)**	**1.60 (1.49, 1.72)**	**1.24 (1.13, 1.35)**	**1.37 (1.24, 1.50)**
Race/ethnicity				
White, non-Hispanic	ref	ref	ref	ref
Hispanic	1.08 (0.79, 1.49)	1.21 (0.87, 1.70)	1.23 (0.85, 1.77)	1.21 (0.81, 1.80)
Other race, non-Hispanic	0.92 (0.65, 1.29)	1.61 (1.17, 2.22)	0.95 (0.67, 1.37)	**1.53 (1.07, 2.20)**
Medicaid dual enrollment	0.96 (0.74, 1.25)	**1.60 (1.24, 2.07)**	0.90 (0.67, 1.22)	**1.39 (1.02, 1.88)**
Frailty	**2.13 (1.79, 2.54)**	**4.03 (3.30, 4.92)**	**1.49 (1.16, 1.91)**	**2.06 (1.56, 2.72)**
Any comorbidity	**1.35 (1.10, 1.66)**	**2.07 (1.62, 2.64)**	1.21 (0.97, 1.51)	**1.37 (1.04, 1.80)**
Health Area Factors				
Region				
Northeast	0.95 (0.76, 1.19)	1.10 (0.86, 1.40)	0.94 (0.74, 1.20)	1.15 (0.88, 1.50)
Midwest	0.89 (0.68, 1.17)	0.89 (0.66, 1.20)	0.83 (0.62, 1.11)	0.89 (0.64, 1.23)
South	0.94 (0.75, 1.18)	1.07 (0.84, 1.36)	0.96 (0.75, 1.23)	1.14 (0.86, 1.50)
West	ref	ref	ref	ref
Rural/less urban	1.06 (0.81, 1.39)	1.02 (0.76, 1.36)	1.19 (0.88, 1.60)	1.13 (0.81, 1.59)
Hospital with chemotherapy in HSA	1.03 (0.67, 1.58)	1.27 (0.82, 1.97)	0.97 (0.62, 1.53)	0.79 (0.49, 1.27)

Adjusts for variables above and prior cancer, diagnosis year, histology, stage, B symptoms; bolding for p<0.05; HSA=health service area

•After adjustment for patient, disease, and health area factors, older age and frailty were associated with increased odds of other treatment compared to full treatment

•After adjustment for patient, disease, and health area factors, older age, other race, Medicaid dual enrollment, frailty, and comorbidity were associated with increased odds of no treatment compared to full treatment

Conclusions

•Frailty, comorbidity, and disease factors did not fully explain the relationship between age and first-line treatment

•Treatment differences by age may reflect end-of-life care, patient preference, or provider choice; however, chronological age alone should not dictate care

•Unexplained relationships between other race and Medicaid dual enrollment with no treatment may represent disparities in care for HL

•Health area factors were not associated with first-line treatment in elderly patients with HL

•Future work will examine the relationship between first-line treatment and outcomes in older patients with HL

•These results can then be used to help inform care, reduce disparities, and improve outcomes

Funding Source: National Center for Advancing Translational Sciences, NIH, Award Number 1KL2TR002545

Contact: Angie Mae Rodday arodday@tuftsmedicalcenter.org