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POSTER ABSTRACTS

902.HEALTH SERVICES AND QUALITY IMPROVEMENT - LYMPHOID MALIGNANCIES

Patterns of Care Among Adolescents and Young Adults Treated for Acute Lymphoblastic Leukemia: A Retrospective Study across Diverse US Practices

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Background. Studies have demonstrated superior outcomes in adolescents and young adults (AYAs, age 15-39 years) with T-cell and B-cell/Philadelphia chromosome negative (Ph-) acute lymphoblastic leukemia (ALL) who are treated using pediatric-inspired regimens (PIRs). However, some AYAs continue to be treated with non-PIR or adult regimens (ARs) that are associated with less favorable outcomes. The extent to which hospitals and physicians in the United States (US) have adopted PIRs to treat ALL in AYA patients is not known. Additionally, limited knowledge exists about factors associated with use of AR. The objective of this study was to describe patterns of care in AYAs with newly diagnosed ALL, and identify patient, physician and hospital-level characteristics associated with use of PIRs vs. ARs in these patients.

Methods. This retrospective study analyzed data collected from medical charts of AYAs with ALL across varied cancer care settings in the US. Patients were identified by treating oncologists, who were board certified in the relevant specialty and had 3-40 years of post-residency practice experience. Physicians were not eligible to participate if they were associated with a pharmaceutical company or a healthcare/government agency in paid capacity. Patients were included based on the following criteria: newly diagnosed with ALL, 15-39 years at diagnosis, and treated with frontline PIR or AR between January 2016 and April 2022. Patients with a prior history of cancer were excluded. Standardized data collection forms were used by participating physicians to collect patient and clinical characteristics, treatment patterns, and site characteristics. Physicians were compensated for participation for each completed chart. Descriptive statistics (mean, standard deviation [SD], frequency, percentages) were used to describe these characteristics. Chi-square and multivariate logistic regression analyses were conducted to evaluate potential associations of these variables with AR use. The study received IRB (Advarra, Inc.; IRB#: 00000971) exempt status.

Results. The analytic sample consisted of 378 eligible patients. Patients were treated by 178 physicians, of which 16.8% were pediatric oncologists, 59.3% were adult oncologists, and 23.9% treated patients of all ages. The majority of patients were treated at adult centers (82 [21.1%]) or centers that treat patients of all age groups (279 [71.7%]); 24 patients (6.2%) were treated at pediatric centers. Approximately three-quarters (73.8%) were treated at academic centers and one quarter (26.2%) at community centers.

Of the 378 patients, 230 (61%) patients were treated with a PIR and 148 (39%) with an AR. The proportions were similar for both B-cell/Ph- patients (71.3% and 28.3%, respectively) and T-cell phenotypes (46.5% and 53.4%, respectively). Children's Oncology Group (COG)-based protocols were the most common PIR used (60.4%) followed by CALGB 10403 (23%). Among those receiving ARs, HyperCVAD-based regimens was most commonly used (n=125 [84.7%]). Of patients receiving HyperCVAD, 85.6% did not receive any immunotherapy.

In univariate analyses, the use of an AR was significantly higher in subgroups of older AYAs (20-39y), males, and patients with public insurance. AYAs who were obese, had CNS involvement at diagnosis, T-cell immunophenotype, Ph+, Ph-like, or early T-cell precursor (ETP) were associated with AR use. Patients treated at non-pediatric centers, small-medium size hospitals (<500 beds), or those treated by non-pediatric oncologists (those who treat adult only or both adult and pediatric patients) were more likely to receive AR (Table 1).

In multivariate analysis, patient factors independently associated with use of an AR included older age, obesity, Ph+, and Ph-like. Patients treated at small/medium size hospitals or non-pediatric centers were also significantly more likely to receive an AR vs. PIR (Table 2).

Conclusions. The study provides "real-world" insights into treatment approaches used for AYAs with ALL across diverse cancer care settings. Nearly one-half of AYAs with T-cell ALL and one-third of AYAs with B-cell/Ph- ALL received AR. Additional studies are needed to understand the reasons behind the limited uptake of PIR, especially among older AYAs and in smaller and adult treatment settings.

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Table 1. Patient, provider, and site characteristics associated with ALL treatment approach (or regimen)

Characteristics		Total (N=378)	AR (N=148)	PIR (N=230)	p-value
Age, n (%)	Younger AYAs (15-19y)	126 (33.3)	17 (13.5)	109 (86.5)	<0.0001
	Older AYAs (20-39y)	252 (66.7)	131 (52.0)	121 (48.0)	
Gender, n (%)	Male	267 (70.6)	115 (43.1)	152 (56.9)	0.0155
	Female	111 (29.4)	33 (29.7)	78 (70.3)	
Insurance type, n (%)	Commercial	325 (86.0)	120 (44.6)	205 (55.4)	0.01
	Non-commercial	66 (17.5)	29 (36.9)	36 (63.1)	
Obesity, n (%)	Obese	170 (45.0)	93 (54.7)	77 (45.3)	<0.0001
	Non-obese	208 (55.0)	55 (26.4)	153 (73.6)	
CNS involvement, n (%)	Yes	23 (6.1)	12 (52.2)	11 (47.8)	0.0414
	No	347 (91.8)	130 (37.5)	217 (62.5)	
Immunophenotype, n (%)	B-cell	305 (80.7)	109 (35.7)	196 (64.3)	0.0054
	T-cell	73 (19.3)	39 (53.4)	34 (46.6)	
Ph status, n (%)	Positive	41 (10.8)	30 (73.2)	11 (26.8)	<0.0001
	Negative	253 (66.9)	72 (28.5)	181 (71.5)	
Ph like, n (%)	Yes	61 (16.1)	40 (65.6)	21 (34.4)	<0.0001
	No	227 (60.1)	59 (26.0)	168 (74.0)	
ETP, n (%)	Yes	28 (7.4)	14 (50.0)	14 (50.0)	0.0043
	No	31 (8.2)	13 (41.9)	18 (58.1)	
Hospital size, n (%)	Large	198 (52.4)	66 (33.3)	132 (66.7)	0.0218
	Small/medium	180 (47.6)	82 (45.6)	98 (54.4)	
Center type, n (%)	Pediatric-only	207 (54.8)	1 (4.5)	206 (95.5)	<0.0001
	Non-pediatric (Adult/both)	168 (44.4)	147 (41.3)	21 (58.7)	
Physician specialty, n (%)	Pediatric-only	35 (12.7)	5 (14.3)	30 (85.7)	<0.0001
	Non-pediatric (Adult/both)	241 (87.3)	81 (33.6)	160 (66.4)	

Note: Patients not adding up to 100% have missing data. Physician specialty excludes cases where the specialty is unknown.

Table 2: Independent predictors of adult regimen use in AYA ALL population (based on multivariate logistic regression analyses)

Predictors	Odds Ratio	UCL	LCL	P-value
Older AYAs [20-39y] (vs. younger AYAs [15-19y])	4.4	2.2	8.9	<0.0001
Obese (vs. non-obese)	2.4	1.4	4.4	0.0031
Ph+ (vs. Ph-)	3.2	1.3	8.3	0.0155
Ph-like (yes vs. no)	4.0	1.9	8.5	<0.0001
Non-pediatric oncologist (vs. pediatric oncologist)	3.9	1.1	13.9	0.0377
Small/medium size hospital (vs. large)	2.0	1.1	3.5	0.0157

UCL= Upper confidence interval; LCL= Lower confidence interval
Note: Following variables were used in the multivariate model: Age, gender, insurance status, race, ethnicity, BMI, CNS involvement, Immunophenotype, Ph status, Ph-like status, ETP status, hospital type, hospital size, physician specialty. Center type (pediatric/non-pediatric) was not included as it caused instability in the model due to only 1 patient receiving AR in a pediatric center).

Figure 1

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