Real-World Utilization of Janus Kinase Inhibitors (JAKs) and Biologics in Patients with Rheumatoid Arthritis (RA)

Jasvinder A. Singh, MD, MPH[1], Janna Radtchenko, MBA[2], Nehad Soloman, MD[3], Kwas Huston, MD[4], Simon M. Helfgott, MD[5], Colin C. Edgerton, MD[6]

[1]University of Alabama at Birmingham, Birmingham, AL, [2]Trio Health Analytics, Louisville, CO, [3]Arizona Arthritis & Rheumatology Associates, PC, Phoenix, AZ, [4]Kansas City Physician Partners, Kansas City, MO, [5] Brigham and Women's Hospital and Harvard Medical School, Boston, MA, [6]Articularis Healthcare, Charleston, SC

1. Background

JAKs represent a relatively new and growing class of therapy for RA. With 3 JAKs now approved in the US, real-world data on their utilization is needed to inform treatment decisions.

We evaluated patient characteristics and utilization of biologic disease-modifying antirheumatic drugs (biologics) vs JAKs in community rheumatology practices.

2. Methods

Electronic medical records from the American Rheumatology Network (ARN) - Trio Health Rheumatology registry were used for the study. The ARN is a physician led and owned organization with over 200 practicing rheumatologists across the US. Trio Health, an exclusive partner to ARN for data aggregation and analytics, collects and matches data from ARN providers and servicing specialty pharmacies.

Patients with RA diagnosis who initiated or switched to new JAKs or biologics following baricitinib approval in May 2018 were selected for analysis. Differences between groups were assessed using t-test for continuous variables and chi-square test for categorical variables. Logistic regression was used to assess characteristics associated with receiving JAKs vs biologics while adjusting for patient characteristics.

3. Results

Of 22,929 adults who initiated or switched to new biologics/JAKs in the study period, 2,943 (13%) received JAKs; of them, 2,253 (77%) were on tofacitinib, 203 (7%) on baricitinib, and 487 (17%) on upadacitinib.

Compared to patients on biologics, JAK group had significantly (p<.001) higher proportion of patients with commercial insurance (57% vs 49%), lower proportion of patients on methotrexate (27% vs 36%) and glucocorticoids (44% vs 50%), patients with baseline remission/low disease activity [DAS] (50% vs 55%). JAK patients were younger (mean age 57.8 vs 58.6), had shorter follow-up (mean 12 vs. 13.6 mo), duration of therapy (mean 7.9 vs 8.9 mo), and higher # of prior regimens (mean 2.9 vs 2.3). The difference between DAS at 6 mo since switch was not significant (61% vs 63%, p=0.152) [Figure 1].

In multivariable analysis, patients with moderate/high DAS), middle age (41-64 yrs vs 18-40) and those with higher # of prior regimens were more likely to receive JAKs, while patients with non-commercial insurance (Medicare/Medicaid vs commercial, other payer vs commercial) were less likely to receive JAKs [Figure 2].

4. Summary

JAKs were used in heavily pre-treated patients with worse baseline DAS. Future research will assess reasons for switch documented in physician notes.

TABLE 1: Demographic and Clinical Characteristics

no (%) unless indicated	A: Biologics n=19,986	B: JAK Inhibitors n=2,943	C: Tofacitinib n=2,253	D: Baricitinib n=203	E: Upadacitinib n=487	p-values <0.05 are shown			
						A vs B	C vs D	C vs E	D vs E
Age- mean (SD)	58.6 (14) n=19986	57.8 (12.7) n=2943	57.7 (12.7) n=2253	59.6 (12.5) n=203	57.5 (12.8) n=487	<0.001			
Follow-up - months, mean (SD)	13.6 (10.1) n=19986	12 (9.8) n=2943	13.6 (10) n=2253	12.6 (8.5) n=203	4.8 (3.8) n=487	<0.001		<0.001	<0.001
Female	15913 (80)	2352 (80)	1780 (79)	167 (82)	405 (83)				
Race									
White	11306 (88)	1660 (89)	1301 (90)	103 (90)	256 (89)				
Black	1278 (10)	180 (10)	137 (9)	12 (10)	31 (11)				
Other*	209 (2)	16 (1)	15 (1)	0 (0)	1 (0)	0.012			
Unknown	11306 (88)	1660 (89)	1301 (90)	103 (90)	256 (89)				
Payer									
Commercial	9740 (49)	1669 (57)	1254 (56)	106 (52)	309 (63)	<0.001		0.018	0.005
Medicare	5851 (29)	558 (19)	425 (19)	43 (21)	90 (18)	<0.001			
Medicare Advantage	1157 (6)	220 (7)	174 (8)	9 (4)	37 (8)	<0.001			
Medicaid	1129 (6)	155 (5)	136 (6)	8 (4)	11 (2)			0.002	
Other	1976 (10)	315 (11)	245 (11)	35 (17)	35 (7)		0.019	0.045	<0.001
Unknown	133 (1)	26 (1)	19 (1)	2 (1)	5 (1)				
Prior regimens, mean (SD)	2.3 (2.1) n=19986	2.9 (2.3) n=2943	2.8 (2.3) n=2253	3.5 (2.4) n=203	3.2 (2.5) n=487	<0.001	<0.001	<0.001	
Duration, days, mean (SD)	8.9 (8.6) n=19986	7.9 (8) n=2943	8.8 (8.6) n=2253	6.2 (6.7) n=203	4.5 (3.4) n=487	<0.001	<0.001	<0.001	0.022
On glucocorticoids	9899 (50)	1281 (44)	1015 (45)	88 (43)	178 (37)	<0.001		0.0002	
On methotrexate	7098 (36)	809 (27)	643 (29)	42 (21)	124 (25)	<0.001			
Baseline Rapid3, mean (SD)	4 (2.4) n=10708	4.2 (2.4) n=1723	4.3 (2.3) n=1349	4.7 (2.3) n=111	3.6 (2.5) n=263	0.009		<0.001	<0.001
Baseline CDAI	16.9 (12.1) n=7078	19 (13.4) n=1106	19 (13) n=804	18.3 (13.4) n=94	19.4 (14.6) n=208	<0.001			
Baseline DAS28	4.2 (1.6) n=701	4.8 (1.6) n=171	4.6 (1.5) n=98	4.9 (1.7) n=33	5.2 (1.8) n=40	<0.001			
Baseline remission or low disease activity	7190 (55)	1021 (50)	799 (51)	63 (45)	159 (50)	<0.001			

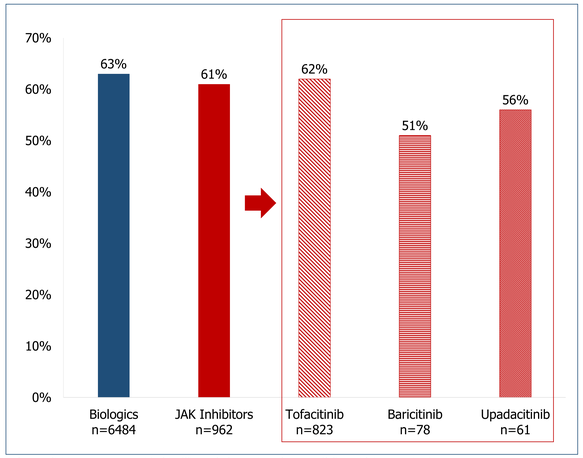
*Other race includes Asian, Pacific, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native.

TABLE 2: Improvement in Disease Activity Scores at 6 Months

Outcomes	A: Biologics n=19,986	B: JAK Inhibitors n=2,943	C: Tofacitinib n=2,253	D: Baricitinib n=203	E: Upadacitinib n=487
CDAI improvement at 6 months	-4 (11.8) n=2821	-3.7 (13.1) n=409	-3.4 (12.7) n=322	-6.9 (15.9) n=51	-1.4 (12.2) n=36
Rapid 3 improvement at 6 months	-0.4 (2) n=3766	-0.5 (1.9) n=626	-0.5 (1.9) n=539	-0.3 (1.9) n=55	-0.4 (2.7) n=32
DAS28 improvement at 6 months	-0.6 (1.7) n=245	-0.7 (1.7) n=64	-0.5 (1.8) n=35	-1.2 (1.8) n=20	-0.5 (1.2) n=9

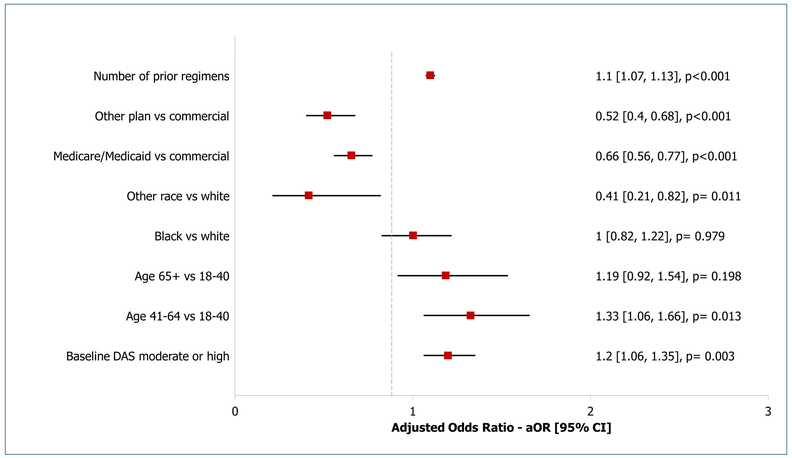
*No statistically significant differences in improvement of CDAI, RAPID3, and DAS28.

FIGURE 1: Remission or Low Disease Activity at 6 Months



*Any available score was used to identify remission or low disease activity vs high or moderate.

FIGURE 2: Characteristics Associated with Initiation of JAKs vs Biologics



*Other race includes Asian, Pacific, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native.

One or more authors provided services to and/or received compensation from: Abbvie, Amarin, Amgen, BMS, Clearview Healthcare Partners, Clinical Care Options, Fidia, Focus Forward, Gilead, GSK, Horizon, Janssen, Lilly, Medisys, Medscape, Navigant, Novartis, OMERACT, Pfizer, Practice Point, Putnam Associates, Sandoz, Spherix, American College of Rheumatology, National Institutes of Health, Trio Health, UBM LLC, UCB, Viking Therapeutics, WebMD.