553

Channeling to Treatment and Associated Changes in Disease Activity Over 12 Months in Patients With RA Treated With Abatacept Versus Other DMARDs in Real-World Community Practice Settings

*L Ferri,[1] **JR Curtis**,[2] E Alemao,[1] J Bryson,[1] K Lozenski,[1] S Balachandar,[1] V Rajagopalan,[3] Y Bao[1]*

[1]Bristol-Myers Squibb, Princeton, NJ, USA; [2]University of Alabama at Birmingham, Birmingham, AL, USA; [3]Mu Sigma, Bangalore, India

Introduction

- Abatacept, a selective T-cell co-stimulatory modulator, has shown efficacy similar to TNF inhibitors (TNFi) for RA management in clinical trial settings.[1]
- However, different patient subtypes have shown a differential response to treatments in real-world and clinical trial settings.[2]
- Additional data comparing the characteristics and associated clinical responses in patients receiving abatacept versus other DMARDs in real-world community practice settings are needed.

Objective

- The objective of this study was to compare changes in disease activity over 12 months in patients with RA treated with abatacept versus other DMARDs in community practice settings.

Methods

- We analyzed data in the United Rheumatology Database, which provides electronic medical record data from 120 community-based rheumatology providers.
- Eligible patients had at least one prescription (i.e. first prescription) for DMARDs from January 1, 2014 to September 30, 2017, were at least 18 years old on the date of the first prescription for the treatment of interest (index date) and had at least two diagnosis codes for RA from a rheumatology provider prior to the index date or within the 180 days after the index date.
- For patients initiating multiple therapies of interest during the study period, we used hierarchical selection (in the order of abatacept [IV and SC], other biologic [b]/targeted synthetic [ts]DMARD, TNFi and conventional [c]DMARD) to ensure a sufficient sample size for each group and to ensure that the groups were mutually exclusive. Patients with multiple drug initiations on the index date were excluded. Patients did not have to stay on therapy post index date.
- The baseline visit period was defined as 6 months prior to the index date (Figure 1). Disease activity at Year 1 was measured in a visit window between 12 months and 18 months after the index date. If a patient had multiple visits within the baseline or 1-year window, the one closest to the index date or (index date + 12 months) was selected.
- Descriptive statistics were used to summarize baseline differences in demographics, disease activity, and laboratory measurements between patients receiving abatacept versus TNFi, cDMARDs and bDMARDs or tsDMARDs of other mechanisms of action (other b/tsDMARDs) as first- or later-line of biologic/targeted therapy.

Figure 1. Study Design

Note: Figure is not drawn to scale
*Index date is the date of the first prescription for the treatment of interest

Table 1. Baseline Characteristics of Patients With RA in the United Rheumatology Database*

Baseline characteristics	Abatacept	Other b/tsDMARD	TNFi	cDMARD
n	3584	3481	7711	9826
Age, years, mean (SD)	61.0 (13.5)	59.7 (13.2)	59.4 (13.8)	63.5 (13.9)
Sex, n (%) Female	2921 (81.5)	2804 (80.6)	5812 (75.4)	7376 (75.1)
BMI, kg/m² n Mean (SD)	2094 30.3 (6.8)	2170 30.1 (6.7)	4364 29.7 (6.6)	5142 29.1 (6.1)
Diabetes, n (%)	406 (11.3)	288 (8.3)	609 (7.9)	533 (5.4)
Hypertension, n (%)	881 (24.6)	943 (27.1)	1727 (22.4)	2050 (20.9)
Charlson Comorbidity Index n Mean (SD)	3584 1.0 (1.4)	3481 1.0 (1.2)	7711 0.8 (1.1)	9826 0.6 (0.6)
HDL n Mean (SD)	54 62.0 (20.4)	111 60.5 (21.8)	60 57.1 (17.2)	52 58.9 (16.8)
LDL n Mean (SD)	56 110.0 (38.4)	102 106.4 (32.8)	54 102.5 (32.9)	40 100.1 (37.9)
RF titer n Mean (SD)	108 73.1 (142.4)	91 99.9 (127.8)	193 75.9 (114.4)	467 65.2 (109.7)
ACPA titer ⩾20 n Mean (SD)	32 109.7 (138.4)	31 87.9 (64.5)	97 103.6 (93.6)	175 84.7 (77.5)
RAPID3 (0–30) n Mean (SD)	1049 8.3 (6.4)	966 8.3 (6.5)	1678 7.3 (6.3)	1679 6.2 (5.6)
CDAI n Mean (SD)	559 20.3 (13.0)	564 19.9 (13.4)	820 18.1 (13.2)	564 14.4 (12.4)
Prior RA treatment+, n (%) 0 1 ⩾2	1627 (45.4) 883 (24.6) 1074 (30.0)	1478 (42.5) 962 (27.6) 1041 (29.9)	4047 (52.5) 2519 (32.7) 1145 (14.8)	7866 (80.1) 1662 (16.9) 298 (3.0)

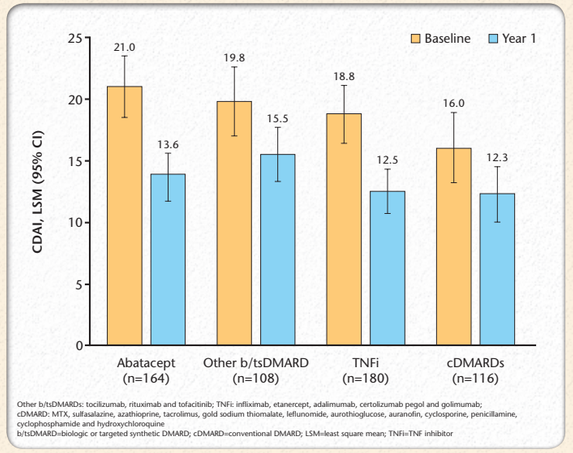
*Other b/tsDMARDs: tocilizumab, rituximab and tofacitinib; TNFi: infliximab, etanercept, adalimumab, certolizumab pegol and golimumab; cDMARD: MTX, sulfasalazine, azathioprine, tacrolimus, gold sodium thiomalate, leflunomide, aurothioglucose, auranofin, cyclosporine, penicillamine, cyclophosphamide, and hydroxychloroquine. Prior RA treatment+ patients may have received DMARDs prior to database entry
ACPA=anti-citrullinated protein antibody; b/tsDMARD=biologic or targeted synthetic DMARD; cDMARD=conventional DMARD; HDL=high-density lipoprotein; LDL=low-density lipoprotein; RAPID3=Routine Assessment of Patient Index Data 3; TNFi=TNF inhibitor

- Mean changes from baseline to Year 1 in CDAI scores were assessed using multivariate linear regressions adjusting for baseline covariates, including age, sex, smoking status, BMI, Charlson Comorbidity Index, CDAI score and number of prior treatments (b/tsDMARDs, TNFi and cDMARDs).

Results

- Abatacept patients had higher disease activity at treatment initiation (CDAI; mean [SD]: 20.3 [13.0]) compared with other b/tsDMARD (19.9 [13.4]), TNFi (18.1 [13.2]) and cDMARD patients (14.4 [12.4]), and were more likely to have a history of diabetes (Table 1).
- After adjusting for baseline covariates, the reduction in least squares mean (LSM) CDAI over 12 months was greater in abatacept patients (–5.6) than other b/tsDMARD patients (–3.4); a difference of 2.2 (95% CI: –0.2, 4.6; p=0.07) (Table 2 and Figure 2).
- The reduction in LSM CDAI was comparable in abatacept and TNFi patients (Table 2).

Figure 2. CDAI at Baseline and at Year 1 in Patients With RA



Other b/tsDMARDs: tocilizumab, rituximab and tofacitinib; TNFi: infliximab, etanercept, adalimumab, certolizumab pegol and golimumab; cDMARD: MTX, sulfasalazine, azathioprine, tacrolimus, gold sodium thiomalate, leflunomide, aurothioglucose, auranofin, cyclosporine, penicillamine, cyclophosphamide and hydroxychloroquine
b/tsDMARD=biologic or targeted synthetic DMARD; cDMARD=conventional DMARD; LSM=least square mean; TNFi=TNF inhibitor

Table 2. Changes in CDAI Over 12 Months in Patients With RA*,†

	n	Baseline, LSM (95% CI)‡	Year 1, LSM (95% CI)‡	Change from baseline, LSM (95% CI)‡,§	Difference in change, LSM (95% CI)‡,§	p value
Abatacept	164	21.0 (18.5, 23.5)	13.6 (11.7, 15.6)	–5.6 (–7.4, –3.8)	Ref	Ref
Other b/tsDMARD	108	19.8 (17.0, 22.6)	15.5 (13.3, 17.7)	–3.4 (–5.5, –1.4)	2.2 (–0.2, 4.6)	0.07
TNFi	180	18.8 (16.4, 21.1)	12.5 (10.7, 14.3)	–6.2 (–7.8, –4.5)	–0.5 (–2.7, 1.7)	0.64
cDMARD	116	16.0 (13.2, 18.9)	12.3 (10.0, 14.5)	–5.6 (–7.7, –3.5)	0.0 (–2.6, 2.7)	0.98

*Includes patients who had CDAI measurements at both baseline and Year 1
†Other b/tsDMARDs: tocilizumab, rituximab and tofacitinib; TNFi: infliximab, etanercept, adalimumab, certolizumab pegol and golimumab; cDMARD: MTX, sulfasalazine, azathioprine, tacrolimus, gold sodium thiomalate, leflunomide, aurothioglucose, auranofin, cyclosporine, penicillamine, cyclophosphamide and hydroxychloroquine
‡Calculated by multivariate linear regression adjusted for age, sex, smoking status, BMI, Charlson Comorbidity Index and number of prior treatments
§Further adjusted for baseline CDAI
b/tsDMARD=biologic or targeted synthetic DMARD; cDMARD=conventional DMARD; LSM=least square mean; TNFi=TNF inhibitor

Conclusions

- Patients with RA receiving abatacept (vs other groups) in community practice settings tend to have slightly higher disease activity and a history of diabetes, which have been reported to be associated with worse clinical response to treatment.
- Nonetheless, mean changes in disease activity from baseline to Year 1 in patients receiving abatacept versus other b/tsDMARDs were larger in magnitude, although the difference was not statistically significant.
- Additional analyses with a larger patient population are warranted.

References

1. Sokolove J, et al. *Ann Rheum Dis* 2016;**75**:709–14.
2. Harrold LR, et al. *Clin Rheumatol* 2017;**36**:1215–20.

Acknowledgments

This study was sponsored by Bristol-Myers Squibb. Professional editorial assistance was provided by Fiona Boswell at Caudex and was funded by Bristol-Myers Squibb.

Disclosures

LF, EA, JB and YB: employees and shareholders: Bristol-Myers Squibb. JRC: consultancy fees and grant/research support: AbbVie, Amgen, Bristol-Myers Squibb, Corrona, Janssen, Lilly, Myriad, Pfizer, Radius, Roche/Genentech and UCB. KL: employee: Bristol-Myers Squibb. SB: employee: Rutgers, The State University of New Jersey; consultancy fees: Bristol-Myers Squibb. VR: consultant: Mu Sigma.