At least one TESAE (subcutaneous abscess, pulmonary tuberculosis, staphylococcal sepsis, toxic shock syndrome, cervix carcinoma, obstructive pancreatitis, diabetic vascular disorder) was reported in 8 (5.6%) of OKZ groups, numerically higher than 4(2.8%) in PBO. There was one death due to septic shock in the OKZ q2w arm. **Conclusion:** Treatment with OKZ over a 24-week period was associated with significant improvements in the signs, symptoms and physical function of RA, with a safety profile consistent with Phase II data for OKZ and with the data for the agents with similar mechanism of action.

There were no discernible differences between the two regimens of OKZ in efficacy or safety outcomes.

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OP0022

RISK OF DIVERTICULITIS AND GASTRO-INTESTINAL PERFORATION IN RHEUMATOID ARTHRITIS TREATED WITH TOCILIZUMAB COMPARED TO RITUXIMAB AND ABATACEPT: A PROSPECTIVE PROPENSITY-MATCHED COHORT STUDY

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Background: There are discordant results regarding a potential increased risk of gastro-intestinal perforation (GIP) in rheumatoid arthritis (RA) patients treated with tocilizumab (TCZ) compared to conventional synthetic disease modifying anti rheumatic drugs (csDMARDs) or TNF inhibitors (TNFi) (1–3).

Objectives: The aim of our study was to compare the risk of diverticulitis and GIP in RA patients treated with TCZ compared to rituximab (RTX) and abatacept (ABA).

Methods: We conducted a multicentric study of patients with RA, prospectively followed in 3 observational French registries evaluating the effectiveness and safety of RTX (Autoimmunity and Rituximab (AIR)), ABA (Orencia and Rheumatoid Arthritis (ORA)), and TCZ (REGistry–RoAcTEmma (REGATE)). Using a propensity score approach, we compared the risk of diverticulitis or GIP during treatment with TCZ vs RTX and ABA. The following covariates were included in the propensity score: age, sex, history of diabetes and neoplasia, Charlson Comorbidity Index, number of previous csDMARDs and TNFi, history of TNFi, daily dose of glucocorticoids (GCs) at baseline, co-treatment with a csDMARDs, average DAS28 during follow-up, duration of RA, and exposure time to the considered bDMARDs.

Results: 4501 patients (1496 treated by TCZ, 1986 by RTX and 1019 by ABA) were included. 21 and 9 GIP occurred in the TCZ treated patients, compared to 10 and 8 in the RTX treated patients and 10 and 2 in the ABA treated patients (corresponding incidence rate (IR) are shown in table 1). Two deaths occurred in patients experiencing GIP: 1 (12.5%) due to undetermined rectal perforation among a RTX treated patient, and 1 (11.1%) due to a perforated ulcer among a TCZ treated patient. Based on inverse probability weighting (IPW), there was an increased risk of diverticulitis and GIP in the TCZ treated patients compared with RTX or ABA (table 1). In a subgroup analysis, we confirmed an increased risk of GIP due to diverticulitis but

not to any other etiology. Older age ($p=0.05$), GCs at baseline ($p=0.10$) and average daily dose of GCs during follow-up ($p=0.08$) seemed associated with GIP only in univariate analysis. Compared to RTX and ABA, diverticulitis and GIP among TCZ patients occurred earlier after the last perfusion ($p=0.01$), with atypical clinical presentation (slow transit in 30%, $p=0.04$) and lower acute phase reactants when the event occurred (C-reactive protein: 31.2 ± 58.4 vs 88.2 ± 89.6 mg/L, $p=0.005$). Perforated diverticulitis seemed to have higher dose of GCs at the time of the event compared to diverticulitis without perforation in univariate analysis ($p=0.06$).

Conclusion: TCZ was associated with an increased risk of diverticulitis, and GIP due to diverticulitis, compared to RTX and ABA. Our study confirms an increased risk of GIP in RA patients treated with TCZ, which might be explained by an increased risk of diverticulitis with misleading clinical presentation.

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OP0023

PREDICTION OF REMISSION FOR EACH BIOLOGICS BASED ON PATIENT'S CLINICAL INFORMATION BEFORE STARTING BIOLOGICS USING EXPLAINABLE ARTIFICIAL INTELLIGENCE: DATA FROM THE KOREAN COLLEGE OF RHEUMATOLOGY BIOLOGICS REGISTRY

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Background: Many studies have identified predictive factors of response to biologics in patients with rheumatoid arthritis (RA). However, there is still a lack in using them in daily clinical practice. Therefore, it is necessary to develop a method that can assist the physician in selecting effective biologics.

Objectives: The purpose of this study is to establish machine learning model that predicts remission in patients treated with biologics using data of RA patients from the Korean College of Rheumatology Biologics (KOBIO) registry, and to identify the important features that have the most influence on the response to biologics using explainable artificial intelligence (AI).

Methods: A total of 1,527 patients who started with biologics such as etanercept, adalimumab, golimumab, infliximab, abatacept, and tocilizumab from December 2012 to June 2019 were enrolled. Remission was predicted using 46 variables corresponding to baseline profiles at the starting of each biologics. We used five machine learning methods such as lasso, ridge, SVM, random forest, and XGBoost. For explainability of those models, we used Shapley plot to interpret the feature importance for each biologics.

Table 1. Incidence (/1000 PY) and risk of diverticulitis or GIP

Exposition (PY)	AE (n)		IR		AE (n)		IR		AE (n)		IR	IPW analysis			
	TCZ (ref)		RTX		ABA		TCZ vs RTX		TCZ vs ABA		OR [95 CI]		p		
	3 990		6 322		2 389										
Diverticulitis	21	5.3	10	1.6	10	4.2	4.5 [2.6-7.6]	<0.0001	3.4 [1.7-6.5]	<0.0001					
GIP	9	2.3	8	1.3	2	0.8	2.8 [1.5-5.1]	0.001	5.4 [1.4-19.9]	0.01					
* Diverticular GIP	6	1.5	3	0.5	2	0.8	3.8 [1.7-8.5]	0.001	6.9 [1.9-25.4]	0.004					
* Due to another etiology	3	0.7	5	0.8	0	0	1.4 [0.5-3.9]	0.5	-	-					

AE=adverse events; PY=person-years