Safety Profile of Dual Biologic Therapy with Omalizumab and a Second Biologic Agent

Sheeba Cherian, MD[1]; Tomara Konstantinova[1,2] ; Jinxiang Hu[3]; Sadia Hayat, MD[1]

[1]University of Kansas Medical Center, Division of Allergy, Clinical Immunology and Rheumatology [2]The University of Kansas School of Medicine

[3]University of Kansas Medical Center, Department of Biostatistics and Data Science

Introduction

Dual biologic therapy is used clinically in patients with separate disease processes best treated by different biologics or in the management of a single disease refractory to biologic monotherapy. While the safety of biologic monotherapy has been well characterized, there is a paucity of data in the literature regarding the safety of dual biologic therapy. This study aims to characterize the safety profile of using omalizumab concomitantly with a dual biologic agent.

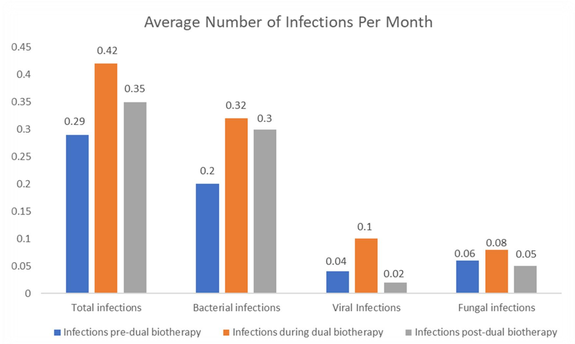
Methods

Retrospective chart review of 8 patients who received omalizumab simultaneously with a second biologic agent at a university-based hospital in Kansas City, KS. Patients under age 18 years were excluded. Patients were identified by the Healthcare Enterprise Repository for Ontological Narration (HERON).

Data was collected from the following time periods: (a) 1 year prior to starting dual biotherapy, (b) the time period on omalizumab plus a second biologic, and (c) 1 year after discontinuation of dual biotherapy. Patient demographics, lab parameters, and infections were analyzed. Descriptive statistics and Wilcoxon signed rank test were used to compare the difference in these parameters between these time periods.

Results

There were no statistically significant differences in the average number of infections per month or other parameters (CBC, GFR, creatinine, BMI) when patients received dual biologic therapy as compared to when patients were off dual biologic therapy.



Dual biologic therapy with **omalizumab** showed **no increased infections** or lab abnormalities.

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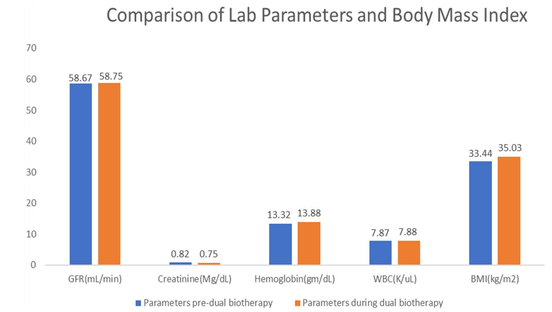
Take a picture for more information on our study regarding the safety profile of **sequential** biologic therapy

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6	Patient 7	Patient 8
Age (y), sex, race	31, female, AI/AN	58, female, Caucasian	63, female, Caucasian	37, female, African American	34, female, Caucasian	37, female, Caucasian	35, female, Caucasian	46, female, Caucasian
Indication for omalizumab	Asthma	Asthma	Asthma	Asthma	Urticaria	Asthma	Asthma	Urticaria
Dual biologics (DB)/Duration of DB tx (mo)	Adalimumab/ 17	Denosumab/ 1	Adalimumab/4	Infliximab/ 3	Adalimumab/ 9 Abatacept/ 6 Rituximab/ 11	Benralizumab/ 8	Adalimumab/ 9 Etanercept/ 3 Ustekinumab/ 45	Adalimumab/ 2 Etanercept/ 4 Tofacitinib/ 5 Abatacept/ 2
Indication for DB	Psoriasis	Osteoporosis	RA	Sarcoidosis	RA	Asthma	Psoriatic arthritis	RA
Total # bacterial/viral/fungal infections on DB	Adalimumab 1/0/0	Denosumab 0/0/0	Adalimumab 1/1/0	Infliximab 4/1/2	Adalimumab 8/0/0 Abatacept 2/1/0 Rituximab 4/0/0	Benralizumab 2/1/0	Adalimumab 1/0/0 Etanercept 0/1/0 Ustekinumab 4/1/0	Adalimumab 0/0/0 Etanercept 1/0/0 Tofacitinib 0/0/0 Abatacept 0/0/0
Concomitant immunosuppressive tx*	None	HCQ Methotrexate	Prednisone	Prednisone Methotrexate Azathioprine HCQ	Prednisone Methotrexate Sulfasalazine	Prednisone	Methotrexate HCQ	Methotrexate
History of PID	No	No	No	No	HGG	No	No	No
Therapy for PID	N/A	N/A	N/A	N/A	None	N/A	N/A	N/A
Other Comorbid conditions**	None	Breast CIS	Diabetes HTN COPD	HTN COPD	Asthma MVR	None	None	HTN

Abbreviations: AI/AN, American Indian/Alaskan native; CIS, carcinoma in situ; COPD, chronic obstructive lung disease; HCQ, hydroxychloroquine; HGG, hypogammaglobulinemia; HTN, hypertension; MVR, mitral valve regurgitation; PID, primary immunodeficiency; RA, rheumatoid arthritis

*Systemic steroids included as immunosuppressive therapy if patient was on chronic therapy ≥ 3 months

**Only data for comorbid cardiovascular diseases, pulmonary diseases, diabetes mellitus, and malignancy were collected



Discussion

The average total number of infections per month while on dual biotherapy was 0.42 compared to 0.29 in the pre-dual biotherapy period (P=0.86) and 0.35 in the post-dual biotherapy period (P=0.88). There were no statistically significant differences in the average number of bacterial infections, viral infections, or fungal infections per month.

Twenty eight of the 36 total infections reported during the dual biotherapy period were bacterial in nature, the majority being sinopulmonary infections. Urinary tract infections and bacterial skin infections were less common causes of bacterial infections. There was 1 event of bacterial meningitis in a patient on omalizumab and adalimumab.

Pooled data of patients' lab parameters showed no statistically significant differences in glomerular filtration rate (P=1), creatinine (P=0.26), hemoglobin (P=0.79), white blood cell count (P=0.75), platelet count (P=0.96), or body mass index (P=0.57) when comparing the period of pre-dual biotherapy and dual biotherapy.

Dual biotherapy has been utilized with success in the management of ABPA[1] and Crohn's disease[3]. Results of our study provide further support for the safety of dual biologic therapy as similarly seen in a study demonstrating safety and efficacy of combining omalizumab with other biologics[2].

Conclusion

Dual biologic therapy with omalizumab and a second biologic agent showed no increase in infections or lab abnormalities. Given our small sample size, larger prospective studies are necessary to further evaluate the safety profile of dual biologic therapy.

References

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