Analysis of Biologic Therapies in Pregnancy with Maternal Rheumatologic Disease

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BACKGROUND

Rheumatologic diseases are commonly diagnosed in women of reproductive age, which can cause significant strain in mental wellbeing, overall health, and family planning decisions. Inflammatory and autoimmune disorders are associated with adverse pregnancy outcomes, such as preterm delivery, pre-eclampsia, and fetal growth restriction, as well as maternal disease flares. Recent development of biologic therapeutics (small molecules or antibodies targeting the immune system) have advanced the ability to treat autoimmune diseases. However, there is minimal data on the safety and efficacy of biologic therapies during pregnancy when compared to non-biologic treatments. As such, we sought to determine whether the use of biologic therapeutics were associated with altered risks of autoimmune flares or postpartum infections compared to non-biologic treatments in subjects with autoimmune disease in pregnancy.

METHODS

We performed a retrospective chart review of patients aged >18 years who delivered at UW between 2003-present whose pregnancy was complicated by autoimmune disease, with and without treatment using biologic therapeutics. We abstracted maternal and offspring clinical characteristics including medical, surgical, obstetric and gynecologic history, demographic parameters, medication usage and timing of administration, disease activity, labor and delivery characteristics, and pregnancy outcomes. Data analysis and statistical significance was determined using Chi squared testing performed using Stata software between patients with and without biologic therapeutics exposure.

RESULTS

We identified 102 pregnancies with diagnosis of autoimmune disease (AID), specifically including rheumatoid arthritis (55), psoriatic arthritis (24), inflammatory arthritis (15), ankylosing spondylitis (5), multiple sclerosis (4), Sjogren's syndrome (3), Still's disease (3), hidradenitis (2), and systemic lupus erythematosus (1). The maternal age ranged from 18-47. A total of 60/102 (59%) of AID patients were treated with biologic therapeutics, in which the targets included TNF-alpha (53), IL-6 (7), CD20 (4), IL12/23 (2), IL-5/IgE (2), IL-1 (2), and integrins (1).

		Biologics (n=60, 58.8%)	No-biologics (n=42, 41.2%)	p-value
Any Antepartum flare		16 (26%)	3 (7%)	0.012
Timing of flare	1st tri (<14w)	5	3	0.34
	Early 2nd tri (14-21w)	1	1	
	Late 2nd tri (22-28w)	6	0	
	3rd tri (>28w)	3	0	
Any Postpartum Flare		16 (26%)	6 (14%)	0.13

Table 1: Comparison of autoimmune flare rates antepartum and postpartum across treatments

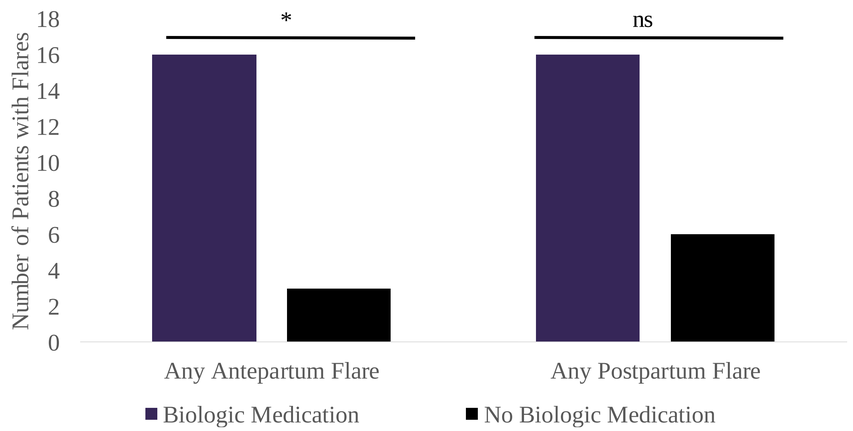

Figure 1: Comparison of the number of autoimmune flares antepartum and postpartum across biologic and non-biologic treatments. * = p< 0.05, ns= not significnat

DISCUSSION

Analysis of our data shows a significant increase in antepartum flares in those on biologic treatments, specifically within the late second and third trimester (after 22 weeks). In addition, there was no significant difference in postpartum flares, antepartum infections, or postpartum infections in our groups.

As this is preliminary data, we need to continue to identify patients within our criteria to better identify if the differences we see are due to a more severe disease phenotype or due to treatment with biologic medications

CONCLUSIONS

Despite the potential benefits of biologic treatments in pregnancy, our data demonstrate increased antepartum flares in patients on biologics compared to patients on alternative treatment. This may represent a more severe disease phenotype in patients receiving biologics. We did not detect increased risk of postpartum infections or readmissions in patients receiving biologics, suggesting safety of these medications despite potential for immunosuppression.

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In an effort to provide better information for mothers suffering from autoimmune disease, we sought to identify if biologic treatments reduced the occurrence of AID flare in pregnancy Our initial data shows an increase prevalence of autoimmune disease flares during pregnancy in those treated with biologic medications, which may be indicative of their more severe disease, rather than the medication usage.