

STRONG CHILDREN'S RESEARCH CENTER – Summer 2021

Incidence of Elevated Creatinine in Pediatric Inflammatory Bowel Disease Patients Treated with Infliximab

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Background: Pediatric Inflammatory Bowel Disease (IBD) which can be characterized as Crohn's Disease, Ulcerative Colitis or Indeterminate Colitis, is an autoimmune inflammatory disease affecting the gastrointestinal tract. IBD is one of the most significant chronic diseases affecting children and adolescents and is thought to be caused from an interaction between genetic, environmental factors, and immunological factors. Chronic medication use is often needed to maintain remission. It is known that renal complications in pediatric IBD patients are higher than the general pediatric population, however, the etiologies of these complications remain unclear. At Golisano Children's Hospital (GCH), there has been an increase in renal referrals for IBD patients on Infliximab (IFX) with elevated creatinine.

Objective: The two main objectives of this study was: 1) to see if IFX has a negative impact on kidney function in pediatric IBD patients, 2) to see if pediatric IBD patients who are treated with IFX have a change in their baseline creatinine and whether this increase is sustained over time.

Methods: This is a retrospective study of 161 pediatric patients between the ages of 6 months and 21 years of age diagnosed with IBD between 2016 to 2021 and receiving IFX at Golisano Children's Hospital in the Division of Pediatric Gastroenterology. Data collected from medical records included age, sex, weight, height, BMI, diagnosis date, IBD type, mesalamine use, immunomodulator use, NSAID use, steroid use, date of first IFX infusion, baseline serum creatinine (sCr), max elevation of creatinine, corresponding IFX level, and length of time on IFX treatment at time of maximum Cr elevation. Patients were subdivided into 3 cohorts: No sCr Elevation, ≥ 0.2 sCr Elevation, and ≥ 0.3 sCr Elevation. Within these sub-groups, transient vs. sustained levels were recorded. Increase in creatinine was determined by comparing baseline Cr to maximum Cr level. Additional data including cystatin C was collected on a sub-group of patients who had been referred to pediatric nephrology for elevated Cr levels. T- tests were used for numerical data and Chi Square tests for categorical variables.

Results: 127/161 children were included in the analysis. Approximately 42% and 20% of the patients were found to have a Cr elevation of ≥ 0.2 and ≥ 0.3 respectively. In both cohorts, Cr elevations were primarily transient with only one third having a sustained increase (>3 months). Patients with a Cr increase of ≥ 0.2 were mostly male and this occurred, on average, a year after their initial IFX infusion. Use of mesalamines, immunomodulators, NSAIDs, and steroids had no significant impact on Cr elevations.

Conclusion: This study demonstrated that 42% of pediatric IBD patients who were receiving IFX had an elevation from their baseline Cr of ≥ 0.2 during their time of treatment. In only one third of this group, was there a sustained increase for over 3 months. Based on this, Infliximab

most likely is not associated with sustained Cr elevation, and transient elevations may be expected during their treatment course. Patients who have a sustained increase for over 3 months, may then warrant referral to Pediatric Nephrology for further investigation. These findings may be reassuring to clinicians who are prescribing IFX to IBD patients to induce and maintain remission.