

# STRONG CHILDREN'S RESEARCH CENTER

## Summer 2019 Research Scholar

**Name: Julia Scher**

**School: Mercer University**

**Mentor: Dr. Marc Lande**

---

### **Retrospective Evaluation of the Use of Immunosuppressive Therapy in Pediatric IgA Nephropathy**

**Background:** IgA nephropathy (IgAN) is the most common primary glomerular disease in the world. Within 20 years after diagnosis, about 20% of patients with IgAN are in end-stage renal disease (ESRD). There is a general consensus that children with IgAN who demonstrate high urinary protein/creatinine ratios (TP/Cr) should be treated with steroids. Kidney Disease Improving Global Outcomes (KDIGO) recommends either oral steroids for six months or the Locatelli protocol, which involves six months of every-other-day oral steroids and a 3-day pulse of IV methylprednisolone at the beginning of months 1, 3, and 5. It's unknown which protocol is more effective or which has fewer side effects in pediatric patients. Occasionally, IgAN can present more aggressively, making aggressive treatment with steroids and other medications like Cytoxan (chemotherapy) necessary.

**Methods:** The inclusion criteria are biopsy-proven IgAN with follow-up at URM or an affiliated clinic. The exclusion criterion is end-stage renal disease within 6 months of biopsy. 3 subjects were excluded. Remaining subjects (N=33) were separated into four groups based on the treatment they received: Locatelli (N=12) includes subjects who received the Locatelli protocol; Oral (N=9) includes subjects who were treated with one (or zero) pulses of methylprednisolone along with oral steroids; No Immunosuppression (N=5) includes subjects who were not treated or who were only treated with blood pressure medications (did not receive steroids); Aggressive Treatment (N=7) includes subjects who received pulse steroids and oral steroids with additional medications like Cytoxan or Cellcept or who received the Tune-Mendoza protocol (higher frequency pulse steroids). Data from each patient were collected at three points in time: at biopsy (before treatment began), six months after the biopsy, and at the final encounter that nephrology had with the patient.

**Results:** The Locatelli and Oral groups were similar at baseline except that they differed significantly in sex distribution with females being more likely to be assigned the Locatelli protocol ( $p=0.001$ ). As expected, patients who were not treated with steroids had higher eGFRs, lower TP/Cr, and lower percentages of biopsy indicators. Aggressively treated patients had significantly higher percent crescents and interstitial fibrosis, a median eGFR in CKD2 range (89), and a median TP/Cr in the nephrotic range (2.83). At the final encounter, the Oral group was the only group with a significant increase in eGFR (+27). The Locatelli and Aggressive Treatment groups showed significant loss of height z-score and significant increases in weight z-score, but the weight changes did not persist through the final encounter. Some Locatelli subjects had an increased TP/Cr from six months to the final encounter while the Oral subjects tended to sustain their decrease in TP/Cr through the final encounter (-0.94 compared to baseline). There was no significant correlation between percentage of glomerular sclerosis, interstitial fibrosis, or crescents with final TP/Cr.

**Conclusion:** Although the Locatelli treatment reduced subjects' TP/Cr, the Oral treatment tended to have a greater and more sustained effect without rebound at the final encounter. The Oral treatment had a significant effect in increasing eGFR while the Locatelli treatment led to a similar average eGFR when comparing baseline with final encounter. The Oral treatment did not result in a significant loss of height velocity while both the Locatelli and Aggressive Treatment protocols did. The Aggressive Treatment median eGFR improved to be within normal range by the final encounter, and the median TP/Cr was below nephrotic range at the final encounter.

**Implications:** For patients requiring steroid treatment but not needing an aggressive treatment, six months of oral therapy is preferred for treatment of children with IgAN.