

### Pediatric IBD in Croatia

Inflammatory bowel disease (IBD) is relatively common in Europe and North America and is associated with an increasing incidence and prevalence. The authors of this study evaluated the incidence of pediatric IBD in Croatia. Europe has been noted to have a latitude effect regarding IBD in which northern European countries have increased IBD compared to European countries near the Mediterranean, and this study evaluated for a north-south variant in regards to pediatric IBD presentation in Croatia as well.

This prospective, multicenter study evaluated all children (defined as younger than 18 years of age) with IBD in Croatia over a one-year period between 2016 and 2017 via an on-line database. The database maintained basic demographic data as well as anthropometrics, gastrointestinal symptoms, extraintestinal disease manifestations, Paris Classification, laboratory and endoscopic findings, therapies, and Pediatric Crohn's Disease Activity Index (PCDAI) and Pediatric Ulcerative Colitis Activity Index (PUCAI) scoring. All patients had data entered at diagnosis and at 6 and 12 months after IBD diagnosis.

In total, 51 pediatric patients were diagnosed with IBD during this time period for which 19 patients (37.3%) were diagnosed with Crohn's disease, 28 patients (54.9%) were diagnosed with ulcerative colitis, and 4 patients (8%) were diagnosed with inflammatory bowel disease – unclassified (IBD-U). The median age at IBD diagnosed was 14.8 years (range 5.4-17.8 years), and all IBD types were more common in male patients. The incidence of new pediatric IBD cases was 7.05 / 100,000 children with the highest incidence of IBD subtypes consisting of ulcerative colitis (3.87 cases / 100,000 children). The lowest incidence of overall pediatric IBD (estimated at 4.5 – 4.85 cases / 100,000 children) was noted in southern Croatian counties (specifically, Dubrovnik-Neretva and Split-Dalmatia counties) while the highest incidence of pediatric IBD was noted in the most northern county of Croatia (Međimurje County) at 22.8 cases / 100,000 children. In terms of all new IBD cases, 41 children were from northern Croatian counties (with a resultant pediatric IBD incidence of 8.38 cases / 100,000) and 10 children were from southern Croatian counties (with a pediatric IBD

incidence of 4.26 cases / 100,000 children).

The authors of this study comment that the incidence of pediatric IBD in Croatia appears to fit into the north-south gradient of IBD consistent with other parts of Europe, and there appears to be a distinct north-south gradient of pediatric IBD in Croatia itself. The reasons for these findings are unclear, and more research is needed to determine if infectious, genetic, economic, or other factors may explain these findings.

**Editor's note:** A map of counties of Croatia can be found at: [en.wikipedia.org/wiki/Counties\\_of\\_Croatia](https://en.wikipedia.org/wiki/Counties_of_Croatia)

Ivkovic L, Hojsak I, Trivic I, Sila S, Hrabac P, Konjik V, Senecic-Cala I, Palcevski G, Despot R, Zaja O, Kolacek S. Incidence and geographical variability of pediatric inflammatory bowel disease in Croatia: data From the Croatian national registry for children with inflammatory bowel disease. *Clinical Pediatrics* 2020; 59: 1182-1190.

### Does Intrapyloric Botulinum Injection Improve Feeding?

Intrapyloric botulinum toxin is used in adults and children to treat gastroparesis when there are associated symptoms such as emesis. However, the authors of this retrospective, single center, open-label study evaluated the ability of this treatment modality to improve feeding difficulties in children with associated gastrointestinal symptoms. All children aged 5 years of age or younger who had undergone intrapyloric botulinum toxin and who had a recorded follow up clinic visit within one year after injection were included. All patients underwent intrapyloric botulinum toxin dosing of 6 Units per kilogram (maximum of 100 Units) divided into 4 quadrant injections at the pylorus. Patient records were reviewed for baseline patient characteristics including use of enteral feeds and indication for intrapyloric botulinum toxin. Results of gastric emptying scans, upper gastrointestinal barium series, antroduodenal manometry, and esophagogastroduodenoscopy also were recorded. Patients with pseudo-obstruction were excluded from the study. Response to intervention was determined by a clinic follow-up appointment within one year of the intervention, and patients were characterized as having no improvement,

partial improvement, and complete resolution depending on their outcome.

In total, 112 patients underwent intrapyloric botulinum toxin with 27 patients being excluded due to insufficient follow-up data, diagnosis of pseudo-obstruction, or the presence of an interval illness that made response interpretation difficult. The mean age of the study patients was  $2.9 \pm 1.6$  years, and 65% of these patients had an enteral feeding tube of which 46% of such patients had a gastrostomy tube, 6% had a nasogastric tube, 47% had a gastrojejunal tube, and 2% had a nasojejunal tube. Gastric emptying studies were abnormal in 49% of study patients. Gastrointestinal symptoms leading to botulinum toxin use included emesis, retching, impaired oral intake, rumination, abdominal distention, nausea, inability to tolerate volume, and early satiety.

After intrapyloric botulinum toxin injection, 67% of patients had symptom improvement with 82% of these patients having partial improvement and 18% having complete symptom resolution. Additionally, significantly more patients were receiving some degree of oral feeds and significantly less patients were requiring postpyloric feeds after injection. Univariate analysis demonstrated that children less than 3 years of age had significantly greater improvement after injection compared to older children. Patients with rumination disorder showed no real improvement with injection therapy. Multivariate analysis demonstrated no specific variable that was associated with symptom improvement after intrapyloric botulinum toxin injection. It was noted that 14% of patients who underwent injection had subsequent medications added to their regimen to treat gastrointestinal symptoms; however, these patients had the same rate of improvement compared to patients who had no additional medication added. Only 15 of the initial 51 patients who underwent initial gastric emptying testing had repeat testing, and no significant difference was noted in one-hour gastric residual after injection therapy. In total, 29% of patients underwent repeat intrapyloric botulinum toxin injections within one year of the initial injection, and significantly more patients who underwent repeat injections had clinical improvement compared to patients with no improvement after an initial injection.

This study demonstrates that intrapyloric botulinum toxin may improve feeding difficulties in young children with associated gastrointestinal symptoms. The authors suggest that the lack of association between gastric emptying results and intrapyloric botulinum response indicates that botulinum toxin may work by improving sensory pathways. More research is needed to determine if intrapyloric botulinum toxin is a potential treatment for children with feeding disorders.

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Hirsch S, Nurko S, Mitchell P, Rosen R. Botulinum toxin as a treatment for feeding difficulties in young children. *The Journal of Pediatrics* 2020; 226: 228-235.

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