



The Use of IVIG in a Patient With Uncontrolled Crohn’s Disease Being Treated for Bacteremia

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Introduction

- Medically refractory moderate-to-severe Crohn’s Disease (CD) can be difficult to manage, particularly in the setting of active bacterial or fungal infection
- When traditional immunosuppression can’t be used for induction therapy, IVIG is one of the options available to manage symptoms until immunosuppression can be started

Case Description

- 24 year old male patient, diagnosed with CD at age 17 via biopsy
- He had been on infliximab, ustekinumab and certolizumab intermittently as well as multiple courses of steroids
- Currently on no biologic or other therapy in last 2 months due to cost/transportation difficulties
- Initially presented to ED with non-specific fatigue/chills, discharged from ED with levofloxacin for “pneumonia”
- Blood cultures from ED visit – initial gram stain showed Gram negative rods, so he was told to present for admission
- Blood cultures eventually speciated to *Bacillus cereus* and *Mixta calida*, and antibiotics were narrowed accordingly
- Initial Crohn’s Disease Activity Index (CDAI) was 334, primarily from use of loperamide and an average of 3 liquid bowel movements daily
- Initial HBI was 8
- Vitals on admission
- HR: 118 bpm
- BP: 136/87
- Temperature: 101.2F
- IgG, IgM and IgA levels were all within normal limits

Case Description continued

- Abdominal imaging showed several areas of wall thickening in the small bowel and ascending colon, with no evidence of fistula or abscess
- Blood cultures upon hospital admission grew the same species and previous cultures (*Bacillus cereus* and *Mixta calida*)
- Infectious workup was otherwise negative (including *C difficile*), and the ID team felt that this bacteremia was most likely due to gut translocation
- Based on worsening GI symptoms as well as imaging and laboratory findings, the GI consult team diagnosed him with a moderate-severe Crohn’s flare
- Given the contraindication to high dose steroids and biologic therapy, the GI team recommended a 3 day course of IVIG treatment

	CRP (normal below 8)	Fecal Calprotectin (normal below 49)
Before IVIG	111	>3000
After IVIG	58	1640

- After treatment, the patient’s symptoms improved (average of 1 liquid BM daily with no anti-diarrheals, improved abdominal pain)
- The CDAI 2 days after finishing treatment improved to 117
- HBI improved to 3
- At time of discharge, after finishing antibiotics, he was discharged on 40mg PO prednisone daily with a plan to taper by 5mg each week
- Several weeks after discharge, he followed up with GI as an outpatient and was started on ustekinumab for long term management of CD

Discussion

- Patients with CD are at specific risk of both transient and sustained bacteremia due to increased permeability of their intestinal wall, dysbiosis and altered immune response¹
- Dosing IVIG for CD is not well established, since all evidence is based on case reports and small case studies. Doses anywhere from 0.4 g/kg/day to 1 g/kg/day for 3-5 days have been reported. For the cases who received longer term IVIG, it is typically given every 2 weeks to once a month²
- Up to 80% of patients in small studies using IVIG had some response or remission to IVIG^{2,3}
- It has not been found to be effective in active IBD with *Clostridium difficile* infection⁴, but in cases of other severe bacterial and fungal infections, it can be successfully and safely used for the short-term management of IBD
- IVIG has been of additional interest in treating infections, especially chronic, difficult-to-treat infections due to its general anti-inflammatory effects as well as the direct binding of IVIG to pathogens⁵
- The mechanism of action in CD is postulated to be related to the suppression of the formation of immune complexes, as well as blocking immunoglobulin Fc receptors on macrophages and NK cells⁶
- While it is an expensive option, likely making it untenable for long term treatment in the typical IBD patient, it can be worthwhile in patients with severe disease and contraindications to the commonly used immunosuppression agents

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