

## CLINICAL CASE REPORT

# High Dose Vitamin D Therapy & Anti-inflammatory Diet (Crohn's Disease)

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By: Eduardo Patrick Beltran M. MD  
Internal Medicine - Dermatology  
Director of Clinical Research SPIMS  
Research Scientist – Vitamin D Expert  
[dr.beltran@spininstitute-ms.com](mailto:dr.beltran@spininstitute-ms.com)



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## ABSTRACT

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[dr.beltran@spinstitute-ms.com](mailto:dr.beltran@spinstitute-ms.com)

Crohn's disease is a chronic inflammatory bowel disease that affects the gastrointestinal tract, causing a range of symptoms such as abdominal pain, diarrhea, and weight loss. It is estimated to affect around 3 million people worldwide, with a higher incidence in developed countries. This abstract describes the clinical case of a 27-year-old patient diagnosed with Crohn's disease in 2014, who was treated with conventional immunosuppressive drugs such as mesalazine, azathioprine, and mercaptopurine from 2015 to 2022. During this time, the patient experienced several intestinal complications, requiring two partial intestinal resections and recurring anal fistulas.

Despite regular antibiotic use, the patient's diet was not addressed by the attending physicians. In 2022, the patient learned about high dose vitamin D therapy (HDVD) and anti-inflammatory diet (AID) as an alternative solution for his condition. He began taking 50,000 IU of D3 a day and after one month into the protocol, he felt 90% better with less bloating, better appetite, better sleep, and overall improved health.

The patient has been on the protocol for a whole year, and all of his inflammatory biomarkers have improved, and he is currently in remission. This case highlights the potential benefits of a personalized approach to Crohn's disease treatment, including diet and high-dose vitamin D therapy, when compared to conventional treatments.

## INTRODUCTION

Crohn's disease is a chronic inflammatory condition that primarily affects the digestive system. While it can affect any part of the digestive tract, it most commonly affects the small intestine and the colon. It is a lifelong condition that can cause significant discomfort and impact an individual's quality of life.

The exact cause of Crohn's disease is not yet known, but it is believed to be a result of a combination of genetic, environmental, and immunological factors. Studies have shown that individuals with a family history of the disease are more likely to develop it, and environmental factors such as smoking, diet, chronic infections and stress may also play a role [1].

Crohn's disease affects both men and women equally, with a slightly higher incidence in men. It is most commonly diagnosed in young adults between the ages of 20 and 30, although it can develop at any age [2].

The pathophysiology of Crohn's disease involves chronic inflammation of the digestive tract. The inflammation can occur anywhere from the mouth to the anus, and it can affect multiple layers of the intestinal wall. This inflammation causes a range of symptoms, including abdominal pain, diarrhea, fatigue, weight loss, and nutritional deficiencies [3]. Histopathology usually depicts the presence of transmural inflammation. All mucosal layers of the intestinal wall are involved. Noncaseating granulomas, giant cells, distinct lymphoid aggregates of the lamina propria can be seen, creeping fat and hypertrophic lymph nodes.

Over time, the inflammation can lead to several complications. One common complication is stricturing, which occurs when inflammation leads to the formation of scar tissue. This scar tissue can narrow the intestinal lumen, leading to intestinal obstruction and related symptoms such as cramping, abdominal pain, and constipation.

Another common complication is the development of fistulas, which are abnormal connections between different parts of the digestive system or between the digestive system and other organs. Fistulas can cause significant pain, inflammation, and infection and may require surgical intervention to repair [4].

In severe cases, Crohn's disease can lead to life-threatening complications such as perforation of the intestinal wall or sepsis, which is a severe bloodstream infection. In such cases, emergency surgery is often required to remove the affected portion of the intestine and prevent further complications [5].

The immunology of Crohn's disease involves an abnormal immune response to gut bacteria, which triggers chronic inflammation in the gut. The exact mechanisms by which this occurs are not fully understood, but it is thought that a combination of genetic susceptibility, dysregulated immune responses, and environmental factors contribute to the development of Crohn's disease [6].

The immune dysregulation leads to dysregulation of IL-23-Th17 signaling, which results in unrestrained Th17 cell function, causing inflammation in the gut. This inflammation leads to local tissue damage such as edema, erosions/ulcers, and necrosis [7].

The inflammatory process may also result in obstruction, fibrotic scarring, stricture, and strangulation of the bowel. Mutations in the nucleotide oligomerization binding domain 2 (NOD2) protein are likely involved in the development of CD. NOD2 mutations can lead to a defective immune response and increased susceptibility to bacterial infections, which can contribute to inflammation [8].

Abscess and fistula formation is also a common complication of CD. This occurs due to the formation of intestinal aphthous ulcers, which leads to transmural fissures and inflammation of the intestinal walls. The inflammation can cause adherence of other organs or the skin to the affected area, which can result in the penetration of tissue, micro-perforation, and abscess formation. If the abscess becomes larger and breaks through the intestinal wall, a macro-perforation occurs, leading to fistula formation [9].

Biomarkers are molecules or substances that can be measured in the blood, urine, or tissue samples and are used to diagnose or monitor disease activity. In Crohn's disease, several biomarkers have been identified that can help in the diagnosis and monitoring of disease activity, including:

**1.C-reactive protein (CRP):** a protein produced by the liver in response to inflammation in the body. Elevated levels of CRP in the blood are indicative of active inflammation in Crohn's disease [10].

**2.Erythrocyte sedimentation rate (ESR):** a measure of the rate at which red blood cells settle to the bottom of a test tube. Elevated levels of ESR in the blood are also indicative of active inflammation in Crohn's disease [11].

**3.Fecal calprotectin:** a protein found in the stool that is a marker of inflammation in the gut. Elevated levels of fecal calprotectin are indicative of active inflammation in Crohn's disease [12].

**1. Anti-Saccharomyces cerevisiae antibodies (ASCA):** antibodies that target a type of yeast commonly found in the gut. Elevated levels of ASCA are indicative of an abnormal immune response in Crohn's disease [13].

**2. Anti-neutrophil cytoplasmic antibodies (ANCA):** antibodies that target neutrophils, a type of white blood cell. Elevated levels of ANCA are associated with ulcerative colitis, another type of inflammatory bowel disease, but can also be present in a subset of patients with Crohn's disease [13].

The complex interplay between genetic, environmental, and lead to improved treatments immunological factors involved in Crohn's disease continues to be an area of active research, and a better understanding of these factors may and management strategies for patients with this chronic condition.

## VITAMIN D & CROHN'S DISEASE

Evidence suggests that individuals with Crohn's disease are at increased risk of vitamin D deficiency. One reason for this is that the inflammation in the gut associated with Crohn's disease can impair the absorption of nutrients, including vitamin D, from the diet. Vitamin D is absorbed in the small intestine, and if this area is inflamed or damaged, absorption can be reduced [14]. Additionally, people with Crohn's disease may have a reduced appetite or be on restrictive diets, which can further exacerbate nutrient deficiencies.

Furthermore, vitamin D is thought to play a role in modulating the immune system, and there is evidence to suggest that vitamin D deficiency may contribute to the development and progression of Crohn's disease [15]. Some studies have shown that vitamin D supplementation may improve symptoms in people with Crohn's disease.

Overall, the relationship between vitamin D and Crohn's disease is complex and multifactorial. However, it is clear that individuals with Crohn's disease should be monitored for vitamin D deficiency and supplementation always be considered.

Recent research has shown that diet and vitamin D supplementation may play a crucial role in managing Crohn's disease [16]. Some studies have suggested that a diet low in carbohydrates and high in healthy fats and proteins may help reduce inflammation and improve symptoms. In our own practice we can say for fact that of our patient improve significantly once they are put on an anti-inflammatory diet. Additionally, vitamin D supplementation has been shown to reduce inflammation and improve bone health in individuals with Crohn's disease.

In general, Crohn's disease is a chronic inflammatory condition that affects the digestive system. While the exact cause of the disease is not yet fully understood, researchers have identified several genetic, environmental, and immunological factors that may contribute to its development.

Understanding the pathophysiology of the disease and potential complications is essential in managing it effectively.

Additionally, it is crucial that physicians and healthcare providers understand the importance of implementing an anti-inflammatory diet and vitamin D supplementation in individuals with Crohn's disease. It has had profound impact in improving their quality of life and reducing their symptoms.

## THE LGS PROTOCOL

The LGS Protocol is a comprehensive treatment plan designed by Dr. Eduardo Beltran, based on various protocols, including the Coimbra Protocol, to address underlying gut issues such as dysbiosis, SIBO, SIFO, and Biofilms, while compensating for genetic polymorphisms [17]. The approach is primarily centered on a high-dose vitamin D therapy, which is based on Dr. Cicero Galli Coimbra's research in Brazil.

Dr. Coimbra's research has revealed that autoimmune patients have a high prevalence of single nucleotide polymorphisms (SNPs) in vitamin D genes such as CYP2R1, CYP27B1, VDBP, and VDR, as well as genes responsible for the methylation cycle, such as MTHFR and MTR. Our practice has validated these findings, as more than 80% of our patients who underwent genetic testing had similar results [18].

To address underlying gut issues, the LGS protocol recommends an anti-inflammatory diet (AID) that excludes gluten, dairy, lectins, sugar, and highly processed carbohydrates. The protocol also includes supplements that support liver metabolism, such as R-Alpha Lipoic Acid, Omega 3, Mg+, K2 (MK7), and a comprehensive range of B vitamins (B9 & B12 in their methyl form) [19].

The protocol uses compounded formulas containing L-Glutamine, Licorice, and Aloe vera extract to improve enterocyte tight junction integrity. Mitochondrial support is provided through a compounded mix of Co10, L-Carnitine, D-Ribose, and Magnesium complex. Additionally, Royal Jelly has been adapted into the protocol for its ability to improve stem cell function [19].

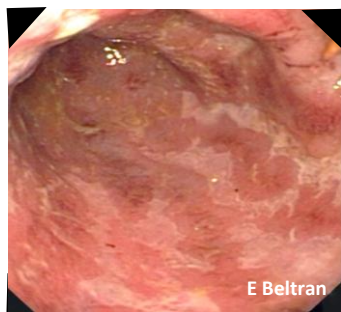
More than 25 supplements are compounded and taken daily as part of the LGS Protocol. In cases of severe dysbiosis, SIBO, SIFO, or the presence of biofilms, antimicrobial herbs or biofilm disruptors such as oregano oil, berberine, garlic, licorice, juniper, and others are used [17,19].

The LGS Protocol incorporates two vitamin D dosage modalities. A **physiologic dose of 200IU/kg/day** is prescribed when high-dose vitamin D criteria are not met. **Therapeutic high dose** recommendations start with **500 IU/kg/day**. The starting dose was established after observing that patients who improved their gut health and corrected dysbiosis tended to require lower high-dose vitamin D requirements [17,19].

In general, the LGS Protocol is a comprehensive treatment plan that addresses underlying gut issues, compensates for genetic polymorphisms, and provides high-dose vitamin D therapy and on occasion will require the use of herbal antimicrobials for treating dysbiosis, SIBO, SIFO or biofilms. The protocol also includes supplements and antimicrobial herbs or biofilm disruptors, if necessary, to support gut health.

## CLINICAL CASE

This is a clinical case of a 27-year-old male patient from Brazil who was diagnosed with Crohn's disease in 2014 through clinical and histopathology evaluation. He began conventional treatment with mesalazine, azathioprine, and mercaptopurine from 2015 to 2022. During this time, the patient experienced several intestinal complications, including two partial intestinal resections and recurring anal fistulas. An endoscopy was performed on the patient, which showed linear and serpiginous ulcerations covered with fibrinous exudate. The mucosa between the ulcerations showed a loss of its normal vascular pattern (Image A).



**Image A:**  
Endoscopic image showing linear and serpiginous ulcerations covered with fibrinous exudate. The mucosa between the ulcerations has lost its normal vascular pattern.

Additionally, a fluoroscopy was done on the patient, which showed images of incomplete intestinal distension as a result of stricture formation with a classical string-like appearance (Image B). This image was obtained prior to having surgery.



**Image B:**  
The terminal ileum is incompletely distended as a result of stricture formation. It has a string-like appearance and is separated from other bowel loops.

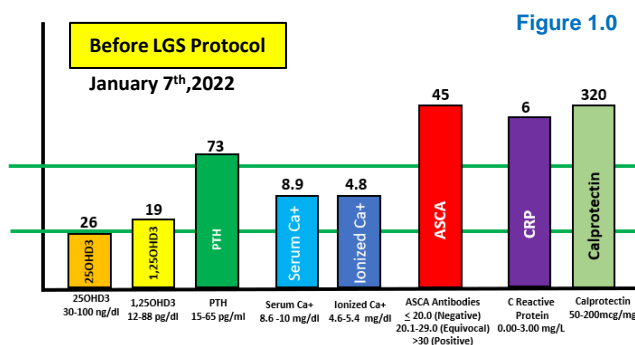
The most common location of the string sign in Crohn's disease is the terminal ileum, and separation from adjacent bowel loops is due to an increase in adjacent mesenteric fat.

Despite regular antibiotic use, the patient's diet was never addressed by the attending physicians and vitamin D supplementation was never even mentioned.

In 2022, the patient learned about the benefits of high-dose vitamin D therapy and anti-inflammatory diet as an alternative solutions for his condition. Prior to starting the protocol patient was using prednisone and mesalazine. Laboratory work was performed showing both low 25OHD3 levels of 26 ng/ml and low 1,25OHD3 19 pg/dl and elevated PTH of 73 pg/dl. This suggests that there is a depletion of vitamin D reserve (25OHD3) that has been ongoing for some time in order to maintain the bare minimum active form of vitamin D (1,25OHD3) production within "normal reference" levels. This is a sign of ongoing active diseases process.

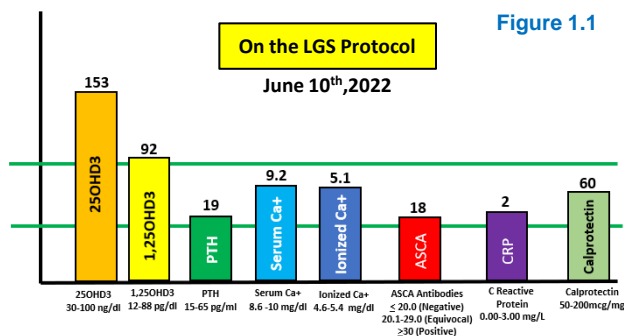
We must remember that corticosteroids (prednisone) upregulate 24 hydroxylase which degrades 1,25OHD3 (active form) and contribute to vitamin D deficiency. Serum and ionized calcium were within normal reference range. Inflammatory biomarkers such as ASCA (Anti-Saccharomyces cerevisiae antibodies) were positive (>45), C-Reactive Protein was elevated (6.0) and a Calprotectin of 320, was also elevated.

Patient agreed to making dietary changes (gluten, dairy, lectin and sugar free) and was given a starting dose of 50,000 IU of D3/day along with co-factors. After only one month into the protocol, patient referred he felt 90% better with less bloating, better appetite, better sleep, and overall improved health.



Only clinical improvement was reported over the following months. Patient referred that after 4 months his anal fistulas had healed completely. He had no bowel inflammation and was able to gain weight, something that he had difficulty doing previously. We must not forget that the patient had two prior surgeries where portions of the intestines were resected reducing his ability to absorb nutrients.

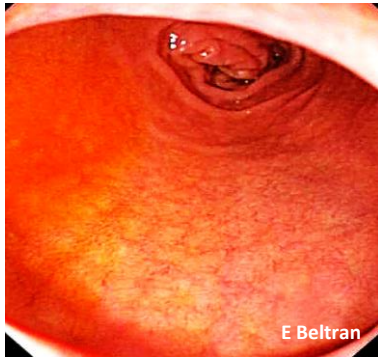
After 5 months into the protocol patient was completely symptom free. Laboratory finding showed an elevated 25OHD3 (153 ng/dl) and slightly elevated 1,25OHD3 (92 pg/dl). This suggests genetic polymorphism of CYP27B1 and VDR genes which are contributors of vitamin D resistance. PTH was almost inhibited (19 pg/ml). Serum and Ionized Calcium was normal. No toxicity was induced by HDVD. Most interesting was seeing normal ASCA, CRP and Calprotectin levels which indicate clinical remission of the disease in only 5 months of treatment as seen on Figure 1.1.



After one year of treatment patient continued feeling well. Patient agreed in doing a routine endoscopy follow-up. Endoscopy showed no signs of inflammation and ulceration. Result came back completely normal. Patient was delighted to see the results of how the AID, HDVD + Cofactors had such a significant impact in his life and how he was able to live normal life once again.

Patient has been on the protocol for a complete whole year, and continues to take 50,000 IU of vitamin D3/day with cofactors along with his AID. He referred that he "has gotten used to the diet and has no intentions in going back to his old ways". All inflammatory biomarkers continue to be within normal range, he is still in remission.

This case highlights the potential benefits of a personalized approach to Crohn's disease treatment, by including an anti-inflammatory diet with high-dose vitamin D therapy and cofactors. It has had a significant impact in the quality of life of hundreds of patients.



**Image C:**  
Endoscopic image showing Normal anatomy with no active sign of Crohn's disease. This is test was done one year after starting the protocol (01/10/2023)

#### Findings of the last endoscopy:

We can observe normal anatomy clear and free of any luminal or intraluminal masses or obstructions. The mucosa, inner lining of the intestine, are pink and reddish in color, indicating good vascularity. The mucosal surface is smooth and without any ulcerations, nodules, or other abnormalities. No irregularities or erosions are evident which may suggest inflammation or any other gastrointestinal disorders.

#### Conclusion:

Normal Findings. Absence of any findings that may suggest Crohn's disease.

### DISCUSSION

The findings of this medical case study provide compelling evidence for the potential benefits of a personalized approach to treating Crohn's disease. In this case, a combination of an anti-inflammatory diet with high-dose vitamin D therapy and cofactors has led to significant improvements in the patient's condition, as demonstrated by the absence of inflammation and ulceration during an endoscopy follow-up after one year of treatment.

Importantly, the patient has continued to feel well throughout the treatment period and remains in remission, with all inflammatory biomarkers within normal range. This suggests that this personalized approach has the potential to help many other patients with Crohn's disease improve their quality of life and achieve similar results. Even more compelling was the fact that images from the last endoscopy showed completely normal findings which is compatible with clinical and laboratory findings.

The success of this approach highlights the importance of taking a holistic view of Crohn's disease treatment and considering factors such as diet/nutrition alongside with cofactors which can be safer than conventional medical interventions. By tailoring treatment to the individual needs of each patient, it may be possible to achieve better outcomes and help more people with Crohn's disease live normal, healthy lives.

### CONCLUSION

In conclusion, this case study provides encouraging evidence for the potential benefits of a personalized approach to Crohn's disease treatment, which includes an anti-inflammatory diet with high-dose vitamin D therapy and cofactors. These findings should be further explored in larger-scale studies, but they offer hope for many patients living with this challenging condition. There are handful of doctors around the world that work with this therapy (HDVD+AID), but we need more physicians and healthcare providers to become familiar with the benefits of such therapy and make this a viable option for patients to choose from.

More incentives are necessary in teaching medical students, future physicians (residents), medical doctors and healthcare providers of the importance of anti-inflammatory diet along HDVD therapy. This is a subject that should be integrated into medical educational curriculum.

### NOTES

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### HUMAN ETHICS

Consent was obtained by all participants in this study

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Video Link