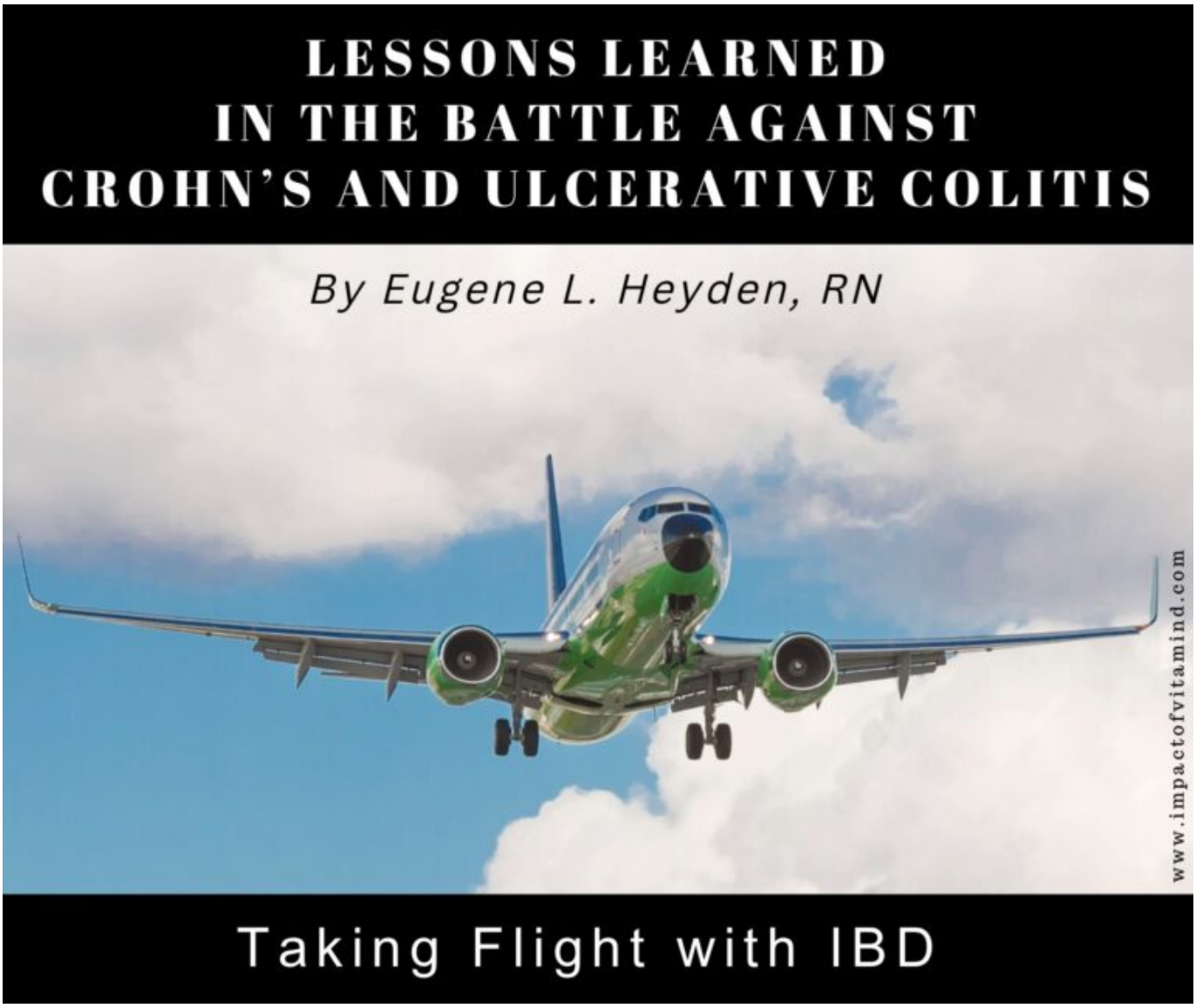
Taking Flight with IBD

written by Eugene L. Heyden, RN. | February 27, 2024



Last update: 03-05-24

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"Hypoxia [inappropriately low blood oxygenation] can induce inflammation in the gastrointestinal tract." **~ Vavricka et al., 2014**

Without delving into the matter, one would never guess that an airline flight could negatively affect the individual with IBD. But it can. There are unseen forces at work.

During airplane flights, the oxygen partial pressure in the cabin decreases, which leads to a reduction in the percentage of oxygen-saturated hemoglobin in the blood. (Vavricka et al., 2014)

And we all know what that means! Although the airline cabin is pressurized, **tissue hypoxia** [low tissue oxygenation] occurs when flying at high altitude. And the longer the flight, the longer the duration of tissue hypoxia. So the question arises, "Could this spell trouble for the patient with IBD?"

To answer the question, a study was conducted. It involved a total of 103 IBD patients. *"Fifty-two patients with flare-ups were matched to 51 patients in remission."* And what did the authors of the study find? Of the individuals who had made a high-altitude journey (>2,000 meters or >6,562 feet) within the past month, 21 of the 52 experienced a disease flare; whereas for those who stayed home (and wished they were somewhere else), only 8 of the 51 experienced a disease flare within the past month (Vavricka et al., 2014). A conclusion was reached. *"Journeys to high altitude regions and/or flights are a risk factor for IBD flare-ups occurring within 4 weeks of travel."* (Vavricka et al., 2014)

Who would have thought an airplane could become a hypobaric chamber? Instead of enriching the tissues with oxygen, as would a hyperbaric chamber, an airplane, flying at high altitude (which is what they do), can depress tissue oxygen levels and become problematic.

But airline flights are not the only way to depress tissue oxygen levels. Staying at high altitudes for a length of time, such as might occur while vacationing in a city or region of high elevation, can also depress tissue oxygen levels and induce a disease flare (Vavricka et al., 2014).

So, if your IBD reemerges or gets worse after a flight or stay at a high-altitude destination, now you know why. You are reacting to a recent period of tissue hypoxia involving the bowel. You may be in for a rough landing.

And I had this thought: Before an airline flight or "living high," discussing this with your physician may be of value. Perhaps medications adjustments can be made. Perhaps a little anticoagulation may be in order. Perhaps another means of

transportation should be considered. Or maybe you should lay low (postpone or avoid air travel), at least for a while.

Since an airline flight may entail jetlag, perhaps we should discuss the supplement melatonin.

Melatonin

"Melatonin is a powerful antioxidant and a scavenger of hydroxyl radicals. Melatonin has also been shown to have anti-inflammatory activities in tissues." **~ Tahan et al., 2010**

"In the intestine, melatonin influences physiological effects such as regeneration of the epithelium and regulation of its function, modulation of the immune response and reduction in the tone of GI muscles through specific membrane receptors . . .." **~ Jena et al., 2013**

"*Of note, 2 of these studies found that melatonin supplementation reduced TNF-α levels, a factor that is believed to be especially important in UC."* **~ Terry et al., 2009**

"The first case report of melatonin supplementation for treatment of IBD was in a patient with UC who used melatonin supplementation for jet lag and incidentally noted an improvement in his UC symptoms." **~ Swanson et al., 2011**

Case report: Gregory

At age 47, Gregory had a remarkable experience to share. His ulcerative colitis symptoms vanished into thin air . . . sort of.

Prior to this, Gregory had had a three-year history of ulcerative colitis, which included the surgical removal of his entire colon. Fortunately, he was able to undergo a procedure what would connect his ileum directly to his rectum, allowing him to collect and pass stool in normal fashion and live a normal life. However, for

10 years he was plagued by chronic rectal inflammation and was prone to develop bouts of bloody diarrhea, usually responsive to mesalazine suppositories. *"Typically, the flare-up of symptoms would occur twice each month and last 5–7 days responding to a 1-wk course of topical mesalazine."* But change was in the air.

Gregory happened to be a frequent flyer and began taking melatonin to counter the jet lag he was experiencing with international flights. I presume it helped with the jet lag, but what it did for his ulcerative colitis is quite remarkable. *"He observed that his colitis symptoms were virtually absent while taking this 'medication.'"* He was convinced that it was the melatonin that gave him relief. And to reinforce the notion,

"During 2000, his flare-ups were more troublesome requiring continuous topical mesalazine therapy. He then self-administered melatonin 3 mg/day during which time he was symptom free for a period of 3 months. His symptoms recurred within 1 wk of running out of the tablets." (Mann, 2003)

Well, Gregory's experience did not go unnoticed by the medical community and studies followed but yielded mixed results. Others had tried melatonin for ulcerative colitis, too, but without benefit. That's understandable—not everything works for everybody. But obviously, melatonin worked for Gregory. Of this, there can be little doubt.

Let me end the case report with this:

"The ability of melatonin to modulate the inflammatory cascade, scavenge reactive oxygen radicals and its ability to prevent and treat animal models of colitis have provided a compelling rationale to study its effectiveness in human IBD. Indeed, melatonin is an attractive therapeutic intervention in human patients with IBD not only for its mechanistic properties, but also because melatonin is readily available, inexpensive and has a low side-effect profile. (Swanson et al., 2011)

Moving along . . .

As to be expected, not everyone is thrilled with melatonin. You can ask Everett for his opinion on the matter.

Case report: Everett

"One patient decided to take melatonin capsules (3 mg) at bedtime. Two months later, the patient started to experience the symptoms of active UC, including bloody mucous diarrhea. He continued taking melatonin and received corticosteroids orally and rectally. Since the symptoms did not calm down, the patient was hospitalized and stopped consuming melatonin; 48 h later there was a complete remission of the UC symptoms." (Chen et al., 2011)

What?!! Complete remission?!! I sensed that the above accounting did not tell the entire story, so I ordered and carefully read the paper that includes the original case report, Maldonado and Calvo, 2008. I learned that Everett had had ulcerative colitis for approximately 15 years prior to the above-reported incident. The first 5 years with ulcerative colitis did not go smoothly. However, the following ten years were *"satisfactory following basic anti-inflammatory therapy (corticoids and salicylazosulfapyridine) and diet (lactose-free diet and increased fiber intake)."* (Maldonado and Calvo, 2008) Everett did have one reported *"reactivation"* of his disease, related to work stress, approximately 2 years prior to starting melatonin, in 1994. And apparently, this *"reactivation"* resolved within a reasonable length of time. Enter melatonin.

"In September 2006, the patient decided by himself to take melatonin capsules (3 mg) before going to sleep. Two months later, the patient started to experience the symptoms of active UC, including bloody diarrhea with mucus. He continued taking melatonin and ***the corticosteroids began to be administered at higher dose and rectally (enema).*** *On this occasion, the disease did not remit and the patient was hospitalized where gastroenterologist recommended him to stop consuming melatonin; 24–48 hr later there was a complete remission of the UC symptoms."* (Maldonado Calvo, 2008, emphasis added)

So, the symptoms of ulcerative colitis can vanish in two days, just by stopping melatonin? Sure, I suppose so. But not so fast! At least with respect to this case. Didn't Everett just receive intensified anti-inflammatory therapy? He did. And could this alone be the reason his symptoms vanished? It could. I believe there is a strong

case for a coincidence here. However, it may be that melatonin was behind his disease exacerbation, after all. In any case, perhaps melatonin should be used with caution and under medical supervision. Oh, of course it should.

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