



ISNS Case Study

Childhood Alopecia

By Dr. Tina Bozicnik, M.D., Dr. Norbert Ketskés, M.D., Dr. Dori Naerbo, Ph.D., and Dr. Christina Rahm Ph.D.

Alopecia areata is a disease that occurs when the immune system attacks hair follicles and causes hair loss. Hair follicles are the structures in skin that form hair. While hair can be lost from any part of the body, alopecia areata usually affects the head and face. Hair typically falls out in small, round patches about the size of a quarter, but in some cases, hair loss is more extensive. Most people with the disease are healthy and have no other symptoms. The course of alopecia areata varies from person to person. Some have bouts of hair loss throughout their lives, while others only have one episode.

Recovery is unpredictable too, with hair regrowing fully in some people but not others. There is no cure for alopecia areata, but there are treatments that help hair grow back quicker.

Anyone can develop alopecia areata. Men and women get it equally, and it affects all racial and ethnic groups. The onset can be at any age, but most people develop it in their teens, twenties, or thirties. When it occurs in children under the age of 10, it tends to be more extensive and progressive. If you have a close family member with the disease, you may have a higher risk of getting it, but for many people, there is no

family history. Scientists have linked several genes to the disease, which suggests that genetics play a role in alopecia areata. Many genes they have found are important for the functioning of the immune system. People with certain autoimmune diseases, such as psoriasis, thyroid disease, or vitiligo, are more likely to get alopecia areata, as are those with allergic conditions such as hay



fever. The most common causes 90-95% are caused by alopecia areata- an autoimmune attack on the hair follicles. Loss of hair patches can progress to alopecia totalis, which is determined as hair loss on the entire scalp.



There are different types of this condition. Alopecia areata is the most common in its main form, but there are other, more rare types. Patchy alopecia areata, which is most common, hair loss happens in one or more coin-sized patches on the scalp or other parts of the body. In alopecia totalis, people lose all or nearly all of the hair on their scalp. Alopecia universalis, in this type, which is rare, there is complete or nearly complete loss of hair on the scalp, face, and the rest of their body. Diffuse alopecia

areata is a sudden thinning of the hair rather than lost patches. Ophiasis alopecia areata causes hair loss in a band shape around the sides and back of the head.

Alopecia areata occurs when the immune system mistakenly attacks the tissues that grow hair (follicles). This condition is not contagious, and children of any age can get alopecia areata. Children lose between 50-100 strands of hair everyday. Normally, new strands start growing from the same hair follicle. When Children have alopecia areata, their immune system mistakenly sees hair follicles as a threat and attacks them. This causes their hair to fall out.

Trichotillomania is a mental disorder that involves recurrent, irresistible urges to pull out hair from the scalp, eyebrows, or other areas of the body, despite trying to stop. Rarer reasons for alopecia in children include pressure-induced alopecia, alopecia related nutritional deficiency or toxic ingestion, toxicity, and androgenetic alopecia. Congenital lesions should be considered for areas of localized alopecia occurring at birth. Some cases of alopecia areata were reported in the neonatal period- autoimmune cause is suspected. Androgenic alopecia is often under-recognized in children. Hormone disbalance-DHT (dihydrotestosterone in particular) attacks the hair follicles and causes them to fall out and stop growing.

Alopecia areata typically affects hair, but in some cases, there are nail changes as well. Nail changes such as ridges and pits occur in some people, especially those who have more extensive hair loss. People with the disease are usually healthy and have no other symptoms. Alopecia usually begins with sudden hair loss of round or oval patches of hair on the scalp, but

any part of the body can be affected, such as the beard area in men, or the eyebrows or eyelashes. Around the edges of the patch, there are often short broken hairs or “exclamation point” hairs that are narrower at their base than their tip. There is usually no sign of rash, redness, or scarring on the bare patches. Some people say they feel tingling, burning, or itching on the patches of skin right before the hair falls out. When a bare patch develops, it is hard to predict what will happen next. The possibilities include the hair regrowing within a few months and it may look white or gray at first but may regain its natural color over time. Additional bare patches may develop. Sometimes hair regrows in the first patch while new bare patches form. Small patches join to form larger ones. In rare cases, hair is eventually lost from the entire scalp, called alopecia totalis. There may be a progression to complete loss of body hair, a type of the disease called alopecia universalis, which is rare. In most cases, the hair regrows, but there may be subsequent episodes of hair loss.

Case Study

Patient: Male

Age: 4-year-old

History: 4-year-old boy presented a case of alopecia areata that progressed almost to alopecia totalis. He was healthy before without any known allergies or problems. The mother reports that a few weeks after vaccination his hair started to fall out and progressed to almost the entire scalp very quickly. Conventional prescribed treatments were not working.

Treatment/Method: As he came in for integrative whole-body examination and a personalized treatment with proprietary blends was started.

Results:

Before starting conventional treatment:

LEGEND:

Proprietary blend 1: silica, vitamin c, and trace minerals.

Proprietary blend 2: N-acetyl L-tyrosine, anhydrous caffeine, L-theanine, velvet bean seed, pine bark, curcumin, and vitamin d.

Proprietary blend 3: black seed oil, resveratrol, turmeric, raspberry ketone, apple cider vinegar, aloe Vera, and d-ribose



Progression after conventional treatment started

Proprietary Blend No. I was administered: Progression after administering 1 of 5 proprietary Root blends.



Progression after 5 months of conventional treatment

References

- Almohanna, H.M., Ahmed, A.A., Tsatalis, J.P. et al. The Role of Vitamins and Minerals in Hair Loss: A Review. *Dermatol Ther (Heidelb)* 9, 51–70 (2019).
<https://doi.org/10.1007/s13555-018-0278-6>
- Alopecia in children: the most common causes, V Atton et al. *Pediatr Rev.* 1990 Jul. 12(1):25-30. doi: 10.1542/pir.12-1-25.
- Castelo-Soccio L. Diagnosis and management of alopecia in children. *Pediatr Clin North Am.* 2014 Apr;61(2):427-42. doi: 10.1016/j.pcl.2013.12.002. Epub 2014 Jan 21. PMID: 24636654.
- Darwin E, Hirt PA, Fertig R, Doliner B, Delcanto G, Jimenez JJ. Alopecia Areata: Review of Epidemiology, Clinical Features, Pathogenesis, and New Treatment Options. *Int J Trichology.* 2018 Mar-Apr;10(2):51-60. doi: 10.4103/ijt.ijt_99_17. PMID: 29769777; PMCID: PMC5939003.
- Diagnosis and management of alopecia in children. Leslie Castelo-Soccio. *Pediatr Clin North Am.* 2014 Apr;61(2):427-42
- Goluch-Koniuszy, Z. S. (2016). Nutrition of women with hair loss problem during the period of menopause. *Przegląd menopauzalny= Menopause review*, 15(1), 56.
- Guo, E. L., & Katta, R. (2017). Diet and hair loss: effects of nutrient deficiency and supplement use. *Dermatology practical & conceptual*, 7(1), 1.
- Management of tinea capitis in childhood. July 2010 *Clinical, Cosmetic and Investigational Dermatology* 3(default):89-98
- Pediatric androgenic alopecia: A review. Jacob Griggs et al. *J Am Acad Dermatol.* 2021 Nov



ISNS Case Study

Colon Cancer

By Dr. Tina Bozicnik, M.D., Dr. Norbert Ketskés, M.D., Dr. Dori Naerbo, Ph.D., and Dr. Christina Rahm Ph.D.

Colorectal cancer is a disease in which cells in the colon or rectum grow out of control. Sometimes it is called colon cancer, for short. The colon is the large intestine or large bowel. The rectum is the passageway that connects the colon to the anus. Sometimes abnormal growths called polyps, form in the colon or rectum. Over time, some polyps may turn into cancer. Colon cancer typically affects older adults though it can happen at any age. It usually begins as small, noncancerous (benign) clumps of cells called polyps that form inside the colon. Over time some of these polyps can become cancerous. If colon cancer develops, many treatments are available to help control it, including surgery, radiation therapy, and immunotherapy.

Colorectal cancer symptoms depend on the size and location of the cancer. Some commonly experienced symptoms include changes in bowel habits, changes in stool consistency, blood in the stool, and abdominal discomfort. The most common treatment for early-stage colon cancer is surgery. Some patients with early-stage disease may also receive chemotherapy after surgery. For patients with localized colon cancer, the five-year survival rate is 90 percent.



Case Study

Patient: Male

Age: 69 -year-old

History: No Colon Cancer occurred in his family. 7 months ago, during a routine examination, a lesion was found on an abdominal ultrasound. He had no complaints. A biopsy was performed during a colonoscopy.

Results of biopsy: Adenocarcinoma sigmae.

The tumor was surgically removed 5 months ago. Due to histological results, 8 chemotherapy treatments followed. An enlarged lymph node was found in the control examinations, which showed a metastatic structure. The patient did not consent to its histological examination. We met for the first time after the 2nd round of chemotherapy treatments. Then the following complaints appeared as a side effect of the treatment.

Complaints: general weakness, diarrhea, nausea, vomiting, and malaise.

Laboratory tests: higher WBC (white blood cells): 17,6 (range 4,8-10,8 G/L) high inflammatory parameter (CRP: 145 mg/l, normal up to 5,0) and higher liver enzyme levels: ASAT:132 (U/L) (range 0-50), ALAT:122, range (0-50), GGTP: 168, (range 8-50 U/l)

LEGEND:

Proprietary blend I: silica, vitamin c, and trace minerals.

Proprietary blend II: N-acetyl L-tyrosine, anhydrous caffeine, L-theanine, velvet bean seed, pine bark, curcumin, and vitamin d.

Proprietary blend III: black seed oil, resveratrol, turmeric, raspberry ketone, apple cider vinegar, aloe Vera, and d-ribose

Proprietary blend IV: Vitamin C, Zinc sulfate, and Vitamin D3.

Proprietary blend V: Inulin, Green Banana Flour, Apple Fiber, Bacillus Coagulans, Spirulina, Wheat Grass, Barley Grass, Alfalfa Leaf, Flaxseed, Psyllium Husk Powder, Chlorella, Broccoli, Kale, Spinach, Green Cabbage, Parsley, Aloe Vera, Cayenne Pepper, Blueberry Powder, Pomegranate Seed Powder, and MCT Coconut Oil Powder

Proprietary Blend VI: B-Nicotinamide Adenine Dinucleotide (NAD+), Magnesium, Trace Minerals, Quercetin, Vitamin D, Vitamin D, and Vitamin K2

Treatment/Method:

Proprietary blend I: 2 x 8 drops, morning and evening, for 3 days. Then every 3 days increased by 1-1 drops every 3 days to 2 x 10 drops.

Proprietary blend II: 1 in the morning for 3 days, then 2, 1 in the morning and 1 in the afternoon, then 3, 2 in the morning and 1 in the afternoon.

Proprietary III: 1 sachet in the morning for 3 days then 1 sachet in the morning and 1 sachet in the evening for 3 days, then 2 sachets in the morning and 1 sachet in the evening.

Proprietary blend IV: 1 teaspoon in the morning

Proprietary blend V: 2 teaspoons in the morning and evening.

Proprietary blend VI: 2 in the morning and 1 in the evening for 7 days, then 2 in the morning and 2 in the evening.

Additional Proposal: A special diet based on Dr. Norbert Ketskes' personal experience of more than 10 years. Exercises to achieve a positive mental and emotional state. The patient for now is undergoing chemotherapy and Dr. Norbert Ketskes's complementary treatments at Primus Labor. Summarizing the results of these combined treatments can be expected after finishing the chemotherapy.

Results: Complaints have been greatly reduced. Diarrhea and vomiting have stopped and he is feeling well.

Laboratory tests: Laboratory: higher WBC (white blood cells): 17,6-9,2 (range 4,8-10,8 G/L) high inflammatory parameter (CRP: 145-31 mg/l, normal up to 5,0) and higher liver enzyme levels: ASAT:132-55 (U/L) (range 0-50), ALAT:122-58, range (0-50), GGTP: 168-62, (range 8-50 U/l)

References

- Frugé, A. D., Smith, K. S., Riviere, A. J., Tenpenny-Chigas, R., Demark-Wahnefried, W., Arthur, A. E., Murrah, W. M., van der Pol, W. J., Jasper, S. L., Morrow, C. D., Arnold, R. D., & Braxton-Lloyd, K. (2021). A Dietary Intervention High in Green Leafy Vegetables Reduces Oxidative DNA Damage in Adults at Increased Risk of Colorectal Cancer: Biological Outcomes of the Randomized Controlled Meat and Three Greens (M3G) Feasibility Trial. *Nutrients*, 13(4), 1220. <https://doi.org/10.3390/nu13041220>
- Ojo OA, Adeyemo TR, Rotimi D, Batiha GE-S, Mostafa-Hedeab G, Iyobhebhe ME, Elebiyo TC, Atunwa B, Ojo AB, Lima CMG and Conte-Junior CA (2022) Anticancer Properties of Curcumin Against Colorectal Cancer: A Review. *Front. Oncol.* 12:881641. doi: 10.3389/fonc.2022.881641
- Ryding, Sara. (2020, September 30). NAD⁺ Metabolism in Cancer and Cancer Therapies. News-Medical. Retrieved on March 07, 2023 from <https://www.news-medical.net/life-sciences/NAD2b-Metabolism-in-Cancer-and-Cancer-Therapies.aspx>.
- Shang, F., Jiang, X., Wang, H., Chen, S., Wang, X., Liu, Y., Guo, S., Li, D., Yu, W., Zhao, Z., & Wang, G. (2020). The inhibitory effects of probiotics on colon cancer cells: *in vitro* and *in vivo* studies. *Journal Of Gastrointestinal Oncology*, 11(6), 1224-1232. doi:10.21037/jgo-20-573
- Wijewantha, N., Eikanger, M. M., Antony, R. M., Potts, R. A., Rezvani, K., & Sereda, G. (2021). Targeting Colon Cancer Cells with Enzyme-Triggered Casein-Gated Release of Cargo from Mesoporous Silica-Based Nanoparticles. *Bioconjugate chemistry*, 32(11), 2353–2365. <https://doi.org/10.1021/acs.bioconjchem.1c00416>



ISNS Case Study

Lung Cancer

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Lung cancer begins in the lungs and may spread to the lymph nodes or other organs in the body, such as the brain. Cancer from other organs also may spread to the lungs. When cancer cells spread from one organ to another, they are called metastases.

There are two main types of lung cancer: non-small cell lung cancer and small cell lung



cancer. Each has a separate staging system that doctors use to classify how advanced the cancer is. Staging helps doctors predict the likely outlook for a person with lung cancer. It can also help them develop the best possible plan.

According to the American Cancer Society (ACS), non-small cell lung cancer (NSCLC) accounts for 80-85% of lung cancer cases. The three main subtypes are adenocarcinoma, squamous cell carcinoma, and large cell carcinoma. Adenocarcinomas account for about 40% of people with lung cancer. It usually

develops in the outer parts of the lung and tends to grow slower than the other two subtypes. Squamous cell carcinomas account for 25-30% of lung cancers. It grows from the cells that line the inside of the airways. Squamous cell carcinoma usually develops at the center of the lung. Large cell carcinoma accounts for about 1-15% of lung cancers and can grow in any part of the lung and tends to grow faster than the other subtypes. Small cell lung cancer is a disease in which malignant (cancer) cells form in the tissues of the lung. There are two main types of small

cell lung cancer which are small cell carcinomas and combined small cell carcinoma. Smoking is the major risk for small cell lung cancer. Signs and symptoms include coughing and shortness of breath.

Different people experience different symptoms for lung cancer. Some people have symptoms related to the lungs. Some people whose lung cancer has spread to other parts of the body (metastasized) have symptoms specific to that part of the body. Some people have general symptoms of not feeling well. Most people with lung cancer do not have symptoms until the cancer is advanced. Lung cancer symptoms may include coughing that gets worse or does not go away, chest pain, wheezing, coughing up blood, feeling tired all the time, and weight loss with no known cause. Other changes that can sometimes occur with lung cancer may include repeated bouts of pneumonia and swollen or enlarged lymph nodes (glands) inside the chest in the area between the lungs.

Case Study

Patient: Female

Age: 55-year-old

History: She had no known illnesses. She smoked 20 cigarettes per day for 20 years. In February 2022, there was an infection with Covid-19. In the spring of 2022, she was investigated for the post-Covid syndrome (prolonged cough, difficulty breathing, weakness, wheezing). On the chest CT, on the right side, in the lower lobe, approximately a 25 x 20 mm irregularly contoured peripheral soft tissue mass, abnormally sized right hilar and mediastinal lymph nodes, and right chest fluid were depicted, and pulmonary metastases were suspected. PET CT a malignant space occupation of the right lower lung lobe, intrapulmonary and pleural metastasis, mediastinal-hilar spread, and multiple osseous propagations can be evaluated.

Oncologist Team: IV stage NSCLC adenocarcinoma, pleural, intrapulmonary. Involvement- palliative systemic treatment is recommended. In June 2022, carboplatin-pemetrexed-pembrolizumab treatment was started. Chest pumping was needed several times.

Complaints: Nausea, diarrhea, extreme weakness, loss of appetite, dyspnea (labored breathing)

Laboratory tests: higher WBC (white blood cells): 15,4 (range 4,8-10,8 G/L) high inflammatory parameter (CRP: 87 mg/l normal up to 5,0) and higher liver enzymes levels: ASAT: 98 (U/L) (range 0-50), ALAT: 88, range (0-50), GGTP: 126 (range 8-50 U/l)

LEGEND:

Proprietary blend I: silica, vitamin c, and trace minerals.

Proprietary blend II: N-acetyl L-tyrosine, anhydrous caffeine, L-theanine, velvet bean seed, pine bark, curcumin, and vitamin d.

Proprietary blend III: black seed oil, resveratrol, turmeric, raspberry ketone, apple cider vinegar, aloe Vera, and d-ribose

Proprietary blend IV: Vitamin C, Zinc sulfate, and Vitamin D3.

Proprietary blend V: Inulin, Green Banana Flour, Apple Fiber, Bacillus Coagulans, Spirulina, Wheat Grass, Barley Grass, Alfalfa Leaf, Flaxseed, Psyllium Husk Powder, Chlorella, Broccoli, Kale, Spinach, Green Cabbage, Parsley, Aloe Vera, Cayenne Pepper, Blueberry Powder, Pomegranate Seed Powder, and MCT Coconut Oil Powder

Proprietary Blend VI: B-Nicotinamide Adenine Dinucleotide (NAD+), Magnesium, Trace Minerals, Quercetin, Vitamin D, Vitamin D, and Vitamin K2

Treatment/Method:

Proprietary blend I: 2 x 6 drops in the morning and evening, for 3 days, then every 3 days then increased by 1-1 drops every 3 days to 2 x 12-15.

Proprietary blend III: ½ sachet in the morning for 3 days then 1 sachet in the morning for 3 days then 1 sachet in the morning and 1 sachet in the evening for 3 days, then 2 sachets in the morning and 1 sachet in the evening.

Proprietary V: 1 teaspoon in the evening for 3 days, then 1 teaspoon in the morning and 1 teaspoon in the evening.

Proprietary blend VI: 2 in the morning and 2 in the evening.

Additional Proposal: She could not have a special diet because she could not eat anything. Exercises to achieve a positive mental and emotional state (e.g: meditation and breathing exercises.)

Results: After 3 months of complementary therapy. She received chemotherapy treatment continuously.

Laboratory tests: higher WBC (white blood cells): 15, 4-10,2 (range 4,8-10 G/L) high inflammatory parameter CRP: 87-28 mg/l (normal up to 5,0) and higher liver enzyme levels: ASAT: 98 -45 (U/L) (range 0-50), ALAT: 88-38, range (0-50), GGTP: 126-70, (range 8-50 U/l). Other control examinations (CT, PET CT) were not performed due to the palliative treatment. Complaints have been reduced. Nausea and diarrhea have stopped. The extreme fatigue has decreased, her appetite improved, and her dyspnea improved. The frequency of chest pumping has decreased. Overall she is feeling well.

References

- Albanes, D., Heinonen, O. P., Taylor, P. R., Virtamo, J., Edwards, B. K., Rautalahti, M., Hartman, A. M., Palmgren, J., Freedman, L. S., Haapakoski, J., Barrett, M. J., Pietinen, P., Malila, N., Tala, E., Liippo, K., Salomaa, E. R., Tangrea, J. A., Teppo, L., Askin, F. B., Taskinen, E., ... Huttunen, J. K. (1996). Alpha-Tocopherol and beta-carotene supplements and lung cancer incidence in the alpha-tocopherol, beta-carotene cancer prevention study: effects of base-line characteristics and study compliance. *Journal of the National Cancer Institute*, 88(21), 1560–1570. <https://doi.org/10.1093/jnci/88.21.1560>
- Khan, M. A., Chen, H. C., Tania, M., & Zhang, D. Z. (2011). Anticancer activities of *Nigella sativa* (black cumin). *African journal of traditional, complementary, and alternative medicines : AJTCAM*, 8(5 Suppl), 226–232. <https://doi.org/10.4314/ajtcam.v8i5S.10>
- Takata, Y., Xiang, Y. B., Yang, G., Li, H., Gao, J., Cai, H., Gao, Y. T., Zheng, W., & Shu, X. O. (2013). Intakes of fruits, vegetables, and related vitamins and lung cancer risk: results from the Shanghai Men's Health Study (2002-2009). *Nutrition and cancer*, 65(1), 51–61. <https://doi.org/10.1080/01635581.2013.741757>
- Tang, X., Ding, H., Liang, M., Chen, X., Yan, Y., Wan, N., Chen, Q., Zhang, J., & Cao, J. (2021). Curcumin induces ferroptosis in non-small-cell lung cancer via activating autophagy. *Thoracic cancer*, 12(8), 1219–1230. <https://doi.org/10.1111/1759-7714.13904>
- Xingyu, Z., Peijie, M., Dan, P., Youg, W., Daojun, W., Xinzheng, C., Xijun, Z., & Yangrong, S. (2016). Quercetin suppresses lung cancer growth by targeting Aurora B kinase. *Cancer medicine*, 5(11), 3156–3165. <https://doi.org/10.1002/cam4.891>



ISNS Case Study

Multiple Sclerosis

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Multiple sclerosis (MS) is the most common disabling neurological disease of young adults with symptom onset generally occurring between ages 20 to 40 years. In MS, the immune system cells that normally protect us from viruses, bacteria, and unhealthy cells mistakenly attack the myelin in the central nervous system (brain, optic nerves, and spinal cord.) Myelin is a substance that makes up the protective myelin sheath that coats nerve fibers (axons). Multiple sclerosis is a disease that affects people differently. A small number of people with MS will have a mild course with little to no disability, whereas others will have a steadily worsening disease that leads to increased disability over time. Most people with MS, however, will have short periods of symptoms followed by long stretches of relative quiescence (inactivity or dormancy), with partial or full recovery. The disease is rarely fatal and most people with MS have a normal life expectancy.



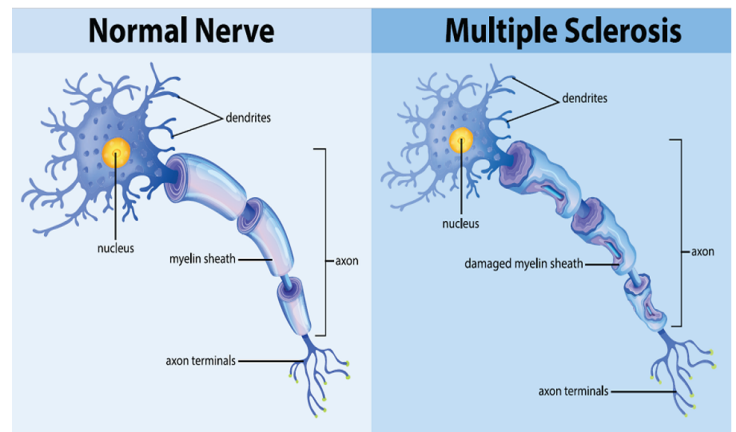
Multiple Sclerosis attacks the axons in the central nervous system protected by myelin, which is commonly called white matter. MS also damages the nerve cell bodies, which are found in the brain's gray matter, as well as the axons themselves in the brain, spinal

cord, and optic nerves that transmit visual information from the eye to the brain. As the disease progresses, the outermost layer of the brain, called the cerebral cortex, shrinks in a process known as cortical atrophy. The term multiple sclerosis refers to the distinctive areas of scar tissue (sclerosis-also called plaques or lesions) that result from the attack on myelin by the immune system. These plaques are visible using magnetic resonance imaging (MRI). Plaques can be as small as a pinhead or as large as a golf ball.

The symptoms of MS depend on the severity of the inflammatory reaction as well as the location and extent of the plaques, which primarily appear in the brain stem, cerebellum (involved with balance and coordination of movement, among other functions), spinal cord, optic nerves, and the white matter around the brain ventricles (fluid-filled cavities). MS may also cause later symptoms such as mental or physical fatigue which accompanies the early symptoms during an attack. Mood changes such as depression or difficulty with emotional expression or control. It could also cause cognitive dysfunction or problems concentrating, multitasking, thinking, learning, or difficulties with memory or judgment. The natural course of MS is different for each person, which makes it difficult to predict. The onset and duration of MS symptoms usually depend on the specific type but may begin over a few days and go away quickly or develop more slowly and gradually over many years. Muscle weakness, stiffness, and spasms may be severe enough to affect walking or standing. In some cases, MS leads to partial or complete paralysis and using a wheelchair is not uncommon, particularly in individuals who are untreated or have advanced disease. Many people with MS find that weakness and

fatigue are worse when they have a fever or when they are exposed to heat. MS exacerbations may occur following common infections. Pain is rarely the first sign of MS, but pain often occurs with optic neuritis and trigeminal neuralgia, a disorder that affects one of the nerves that provides sensation to different parts of the face. Painful limb spasms and sharp pain shooting down the legs or around the abdomen can also be symptoms of MS.

There is currently no cure for MS, but there are treatments that can reduce the number and severity of relapses and delay the long-term disability progression of the disease. Corticosteroids, such as intravenous (infused into a vein) therapies quickly and potently suppress the immune system and reduce inflammation. Plasma exchange (plasmapheresis) can treat severe flare-ups in people with relapsing MS forms that do not respond well to steroids.



Case Study

Patient: Female

Age: 45-year-old

History: Multiple Sclerosis was diagnosed 4 years ago. The diagnosis of the disease was confirmed by a lumbar puncture and MRI.

Symptoms: Relapsing-remitting MS. She had an attack at least once a month, lasting for several days, often 7-10 days even with steroid treatment. She had a degree of fatigue, her legs were numb, she had double vision, she was shaking, she was dizzy, and she had abdominal pain.

Treatment/Method: She received biological therapy continuously. She also received proprietary blends. Proprietary Blend I: 2x5 drops, morning and evening, for 3 days, then every 3 days then increased by 1-1 drops every 3 days to 2x12 drops daily.

Proprietary Blend II: 1 in the morning for 7 days, then 1 in the morning and 1 in the afternoon for 7 days, then 2 in the morning and 1 in the afternoon.

Proprietary Blend III: 1/2 sachet in the morning for 7 days then 1 sachet in the morning, then 1 sachet in the morning and 1 sachet in the evening.

Proprietary Blend IV: 1 teaspoon in the morning.

Proprietary Blend V: 1 teaspoon in the evening.

Proprietary Blend VI: 1 in the morning for 7 days then 1 in the morning and 1 in the evening for 7 days, then 2 in the morning and 2 in the evening.

LEGEND:

Proprietary blend 1: silica, vitamin c, and trace minerals.

Proprietary blend 2: N-acetyl L-tyrosine, anhydrous caffeine, L-theanine, velvet bean seed, pine bark, curcumin, and vitamin d.

Proprietary blend 3: black seed oil, resveratrol, turmeric, raspberry ketone, apple cider vinegar, aloe Vera, and d-ribose

She also received a special diet based on medical expertise. She also did additional exercises to achieve a positive mental and emotional state (e.g: meditation and breathing exercises).

Results: In the first month of treatment, the intensity of symptoms decreased during an attack. She has not had a relapse in 4 months since starting the proprietary blends. Based on the control tests, the progression of the disease stopped.

No side effects were reported.

References

- Ghaiad, H. R., Nooh, M. M., El-Sawalhi, M. M., & Shaheen, A. A. (2017). Resveratrol Promotes Remyelination in Cuprizone Model of Multiple Sclerosis: Biochemical and Histological Study. *Molecular neurobiology*, 54(5), 3219–3229.
<https://doi.org/10.1007/s12035-016-9891-5>
- Johns Hopkins Medicine . (n.d.). Multiple Sclerosis (MS) . Retrieved March 23, 2023, from <https://www.hopkinsmedicine.org/health/conditions-and-diseases/multiple-sclerosis-ms>
- McLaughlin, L., Clarke, L., Khalilidehkordi, E., Butzkueven, H., Taylor, B., & Broadley, S. A. (2018). Vitamin D for the treatment of multiple sclerosis: a meta-analysis. *Journal of neurology*, 265(12), 2893–2905. <https://doi.org/10.1007/s00415-018-9074-6>
- Noor, N. A., Fahmy, H. M., Mohammed, F. F., Elsayed, A. A., & Radwan, N. M. (2015). Nigella sativa ameliorates inflammation and demyelination in the experimental autoimmune encephalomyelitis-induced Wistar rats. *International journal of clinical and experimental pathology*, 8(6), 6269–6286.
- U.S. Department of Health and Human Services. (2023, January 23). *Multiple sclerosis*. National Institute of Neurological Disorders and Stroke. Retrieved March 23, 2023, from <https://www.ninds.nih.gov/health-information/disorders/multiple-sclerosis>



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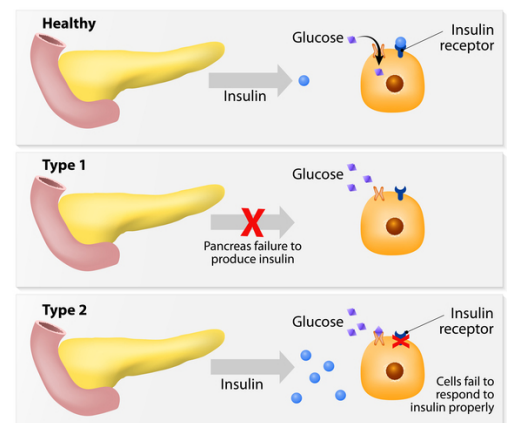
Non-Insulin Dependent Diabetes Mellitus

By Dr. Tina Bozicnik, M.D., Dr. Norbert Ketskés, M.D., Dr. Dori Naerbo, Ph.D., and Dr. Christina Rahm Ph.D.

Non-insulin-dependent (type II) diabetes mellitus is an inherited metabolic disorder characterized by hyperglycemia with resistance to ketosis. The onset is usually after the age of 40. Patients are variably symptomatic and frequently obese, hyperlipidemic, and hypertensive. Clinical, pathological, and biochemical evidence suggests that the disease is caused by a combined defect of insulin secretions and insulin resistance.

Non-insulin-dependent (type II) diabetes has been divided by the World Health Organization (WHO) into two main groups obese and non-obese. Insulin metabolism is abnormal in diabetes either because of reduced secretion or sensitivity to its effects. There are two main types of diabetes: insulin-dependent (IDDM or type 1 diabetes mellitus, formerly juvenile onset) and non-insulin-dependent (NIDDM or type 2 diabetes mellitus, formerly maturity onset.) The increased blood glucose levels seen in diabetes can eventually damage a person's blood vessels, nerves, and

DIABETES MELLITUS



organs. The body attempts to remove the excess glucose through urination and the most common symptoms of type 2 diabetes include increased thirst, increased hunger, increased frequency of urination, extreme fatigue, weight loss, and sudden loss of muscle bulk. Some of these symptoms are also seen in type 1 diabetes but type 2 diabetes symptoms tend to develop more gradually and can take months or years to manifest. This can make it more difficult for people to tell if they have underlying health conditions and often people have had type 2 diabetes for a long time before it is finally diagnosed.

Several factors can increase a person's risk of developing diabetes. The risk factors include being overweight or obese, unhealthy eating habits, low levels of physical activity, a waist measurement of 31.5 inches or more for women and 37 inches for men, raised cholesterol levels, high blood pressure, and smoking. A family history of diabetes can also increase a person's risk of developing the condition. Studies have shown that the offspring of families where one parent has diabetes, are at a 15% risk of developing the condition and that offspring born to two parents with diabetes have a 75% increased risk.

Case Study

Patient: Female

Age: 60-year-old

History: Both grandmothers were also diabetic (NIDDM). Hypertension for 10 years, overweight, smokes (10 pcs/day), 6 months ago 17.2 mmol/l. During a routine laboratory test fasting blood sugar level detected (normal value 4.0-6.4 mmol), Carbamid: 11.8 mmol/l (normal 2.0-7.2), creatinin: 114 mmol/l (normal: 59-104)

Diabetologist opinion: Type 2 diabetes recommended therapy: Metformin 500 mg once a day for 1 week, then twice daily. Diet and exercise.

Control (1 month): Blood sugar level: 14 mmol/l

Caramid: 10.8mmol/l (norm: 2.0-7.2) Creatinin: 110 mmol/l (norm: 59-104),

Recommended therapy: Metformin 500 mg twice a day and Gliclazid 2 x 60 mg and Xulatophy (inj.) 10 mg/day (sc)

Complaints: Highly fluctuating blood sugar levels, fatigue, her weight did not change.

Blood sugar level: 9.2 mmol/l

Carbamid: 10.8 mmol/l (norm.: 2.0-7.2), creatinin: 108 mmol/l (norm.: 59-104),

HBL (Hemoglobin) A1C%: 8.5 (norm: 4.0-6.4% , the

LEGEND:

Proprietary blend I: silica, vitamin c, and trace minerals.

Proprietary blend II: N-acetyl L-tyrosine, anhydrous caffeine, L-theanine, velvet bean seed, pine bark, curcumin, and vitamin d.

Proprietary blend III: black seed oil, resveratrol, turmeric, raspberry ketone, apple cider vinegar, aloe Vera, and d-ribose

Proprietary blend IV: Vitamin C, Zinc sulfate, and Vitamin D3.

Proprietary blend V: Inulin, Green Banana Flour, Apple Fiber, Bacillus Coagulans, Spirulina, Wheat Grass, Barley Grass, Alfalfa Leaf, Flaxseed, Psyllium Husk Powder, Chlorella, Broccoli, Kale, Spinach, Green Cabbage, Parsley, Aloe Vera, Cayenne Pepper, Blueberry Powder, Pomegranate Seed Powder, and MCT Coconut Oil Powder

Proprietary Blend VI: B-Nicotinamide Adenine Dinucleotide (NAD+), Magnesium, Trace Minerals, Quercetin, Vitamin D, Vitamin D, and Vitamin K2

therapeutic target range: below 7%) (the HGB A1C value is usually checked every 3 months)

Treatment/Method:

Proprietary blend I: 2 x 6 drops, morning and evening, for 3 days, then every 3 days then increased by 1-1 drops every 3 days to 2 x 10.

Proprietary blend II: 1 capsule in the morning for 7 days, then 1 capsule in the morning and 1 capsule in the afternoon.

Proprietary III: ½ sachet in the morning for 7 days then 1 sachet in the morning and 1 sachet in the evening.

Proprietary blend IV: ½ teaspoon in the morning.

Proprietary blend V: 1 teaspoon in the evening for 7 days, then 1 teaspoon in the morning and 1 teaspoon in the evening (1 month).

Proprietary VI: 1 capsule in the morning and 1 capsule in the evening.

Results: Control (in 1 month):

Blood sugar level: 7,2 mmol/l (normal value: 4.0-6.4 mmol/l)

Carbamid: 8.8 mmol/l (norm.: 2.0-7.2), creatinin: 104 mmol/l (norm.: 59-104),

Control (in 3 months)

Blood sugar level: 6,2 mmol/l (normal value: 4.0-6.4 mmol/l)

Carbamid: 5,6 mmol/l (norm.: 2.0-7.2), creatinin: 88 mmol/l (norm.: 59-104),

HBL (Hemoglobin) A1C%: 6,4! (norm: 4.0-6.4% , the therapeutic target range: below 7%)

Blood sugar level stabilized!!,

The fatigue is gone, and she has lost 8 kg

References

- Derosa, G., D'Angelo, A., & Maffioli, P. (2022). The role of selected nutraceuticals in management of prediabetes and diabetes: An updated review of the literature. *Phytotherapy research : PTR*, 36(10), 3709–3765. <https://doi.org/10.1002/ptr.7564>
- Funamoto, M., Shimizu, K., Sunagawa, Y., Katanasaka, Y., Miyazaki, Y., Takeya, H., Yamakage, H., Satoh-Asahara, N., Wada, H., Hasegawa, K., & Morimoto, T. (2019). Effects of Highly Absorbable Curcumin in Patients with Impaired Glucose Tolerance and Non-Insulin-Dependent Diabetes Mellitus. *Journal of diabetes research*, 2019, 8208237. <https://doi.org/10.1155/2019/8208237>
- Moschos, M. M., Dettoraki, M., Tsatsos, M., Kitsos, G., & Kalogeropoulos, C. (2017). Effect of carotenoids dietary supplementation on macular function in diabetic patients. *Eye and vision (London, England)*, 4, 23. <https://doi.org/10.1186/s40662-017-0088-4>
- Rodger W. (1991). Non-insulin-dependent (type II) diabetes mellitus. *CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne*, 145(12), 1571–1581.



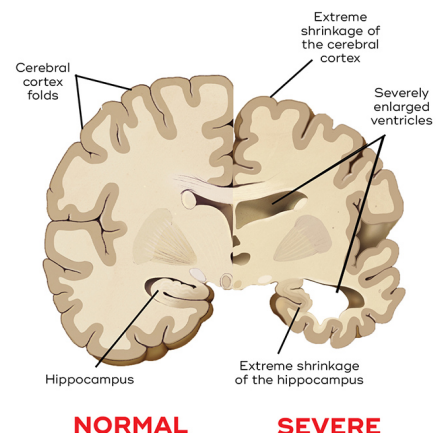
ISNS Case Study

Senile Dementia

By Dr. Tina Bozicnik, M.D., Dr. Norbert Ketskés, M.D., Dr. Dori Naerbo, Ph.D., and Dr. Christina Rahm Ph.D.

Senile also known as senile dementia is the mental deterioration (loss of intellectual ability) that is associated with or the characteristics of old age. Two major types of senile dementia are identified as: those due to generalized “atrophy” (Alzheimer’s-type dementia) and those due to vascular problems (mainly, strokes). Senile dementia is often used when referring to Alzheimer’s disease.

Senility, which is now more commonly referred to as dementia, is characterized by a decrease in cognitive abilities or mental decline. This may include the person’s ability to concentrate, to recall information, and to properly judge a situation. Senility is a deterioration of body and mind associated with advanced aging. Indications of old age vary in the time of their appearance. Symptoms of senility are many of the physical changes associated with old age such as wrinkled skin, stooped posture, decrease in muscle strength, changes in lens and muscles of the eye, and hardening of the arteries.



There are also mental changes associated with senility such as impaired judgment, loss of memory, and sometimes childish behavior. The actual psychological changes are thought to be related to aging of the cortical brain cells. Whereas the physical changes associated with aging occur in all individuals to some extent, evidence of psychological degeneration is not universal. In common usage, the term senility is applied to only mental deterioration.

Dementia is a term used to describe a group of symptoms affecting memory, thinking, and social abilities severely enough to interfere with your daily life. It is not a specific disease, but several diseases can cause dementia. Though dementia generally involves memory loss, memory loss has different causes. Having memory loss alone does not mean you have dementia, although it is often one of the early signs of the condition. Alzheimer's disease is the most common cause of progressive dementia in older adults, but there are several other causes of dementia. Depending on the cause, some dementia symptoms may be reversible. Dementia symptoms vary depending on the cause, but common signs and symptoms include memory loss, which is usually noticed by someone else, difficulty communicating or finding words, difficulty with visual and spatial abilities, difficulty reasoning or problem-solving, difficulty handling complex tasks, difficulty planning and organizing, and confusion and disorientation. Psychological changes that occur with dementia include personality changes, depression, anxiety, inappropriate behavior, paranoia, and hallucinations.

Many factors can contribute to dementia. Some factors, such as age, cannot be changed. Others can be addressed to reduce your risk. Some risk factors that cannot be changed include age, being diagnosed with Down syndrome, and family history. The risk factors that you can change include diet and exercise, alcohol use, sleep disturbances, and cardiovascular risk factors such as high blood pressure.

Case Study

Patient: Male

Age: 72 -year-old

History: Alzheimer's disease was diagnosed 1 year ago (2022)

Medical history:

Lab tests:

TSH (hypothyroidism), B12 and folic acid levels, Creatinine and electrolytes (kidney disease),

Liver function values- Normal range

Clinical test:

The Mini-Mental State Examination (MMSE) is a 30-point, quick-to-take cognitive test that is mainly used to identify dementia and assess its severity in medical, clinical psychologist and neuropsychological practice. The interval from 30 to 29 is considered normal, points 27-28 may indicate a mild neurocognitive disorder, for those from 26 to 20 we assume mild dementia, from 19 to 10 moderate, and from 9 below severe we are talking about dementia.

In his case the result: **19**

Treatment/Method:

The proprietary blend I: 2x6 drops, morning and

LEGEND:

Proprietary blend I: silica, vitamin c, and trace minerals.

Proprietary blend II: N-acetyl L-tyrosine, anhydrous caffeine, L-theanine, velvet bean seed, pine bark, curcumin, and vitamin d.

Proprietary blend III: black seed oil, resveratrol, turmeric, raspberry ketone, apple cider vinegar, aloe Vera, and d-ribose

Proprietary blend IV: Vitamin C, Zinc sulfate, and Vitamin D3.

Proprietary blend V: Inulin, Green Banana Flour, Apple Fiber, Bacillus Coagulans, Spirulina, Wheat Grass, Barley Grass, Alfalfa Leaf, Flaxseed, Psyllium Husk Powder, Chlorella, Broccoli, Kale, Spinach, Green Cabbage, Parsley, Aloe Vera, Cayenne Pepper, Blueberry Powder, Pomegranate Seed Powder, and MCT Coconut Oil Powder

Proprietary Blend VI: B-Nicotinamide Adenine Dinucleotide (NAD+), Magnesium, Trace Minerals, Quercetin, Vitamin D, Vitamin D, and Vitamin K2

evening, for 3 days, then every 3 days, then increased by 1-1 drop every 3 days to 2x12 drops daily.

Proprietary blend II: 1 capsule in the morning for 7 days, then 2 capsules daily, 1 capsule in the morning and 1 capsule in the afternoon for 7 days, then 3 capsules daily, 2 capsules in the morning and 1 capsule in the afternoon for 7 days, then 4 capsules daily, 2 capsules in the morning and 2 capsules in the afternoon.

Proprietary III: ½ sachet in the morning for 7 days, then 1 sachet in the morning.

Proprietary blend IV: 1/2 teaspoon in the morning for 7 days, then 1 teaspoon in the morning.

Proprietary blend V: 1 teaspoon in the evening.

Proprietary blend VI: 1 capsule in the morning for 7 days, then 2 capsules daily, 1 capsule in the morning, and 1 capsule in the evening.

Results:

After 1 month: the change was first reported by the family, a slight improvement in speaking skills, the ability to find information, and mood improved.

After 4 months: Mini-Mental-State Examination (MMS) improved from 19 to 24. Expressed improvement in speaking skills, ability to find information, perception of time and mood. Not only did the family notice, but the patient also reported the improvements. Based on these results, the patient's quality of life improved.

In consultation with a neurologist, the dose of the drug was reduced from 10 mg to 5 mg.

References

- Aarsland D. (2020). Epidemiology and Pathophysiology of Dementia-Related Psychosis. *The Journal of clinical psychiatry*, 81(5), AD19038BR1C. <https://doi.org/10.4088/JCP.AD19038BR1C>
- Gáll, Z., & Székely, O. (2021). Role of Vitamin D in Cognitive Dysfunction: New Molecular Concepts and Discrepancies between Animal and Human Findings. *Nutrients*, 13(11), 3672. <https://doi.org/10.3390/nu13113672>
- Kawahara, M., Tanaka, K. I., & Kato-Negishi, M. (2018). Zinc, Carnosine, and Neurodegenerative Diseases. *Nutrients*, 10(2), 147. <https://doi.org/10.3390/nu10020147>
- Kim, Y., & Clifton, P. (2018). Curcumin, Cardiometabolic Health and Dementia. *International journal of environmental research and public health*, 15(10), 2093. <https://doi.org/10.3390/ijerph15102093>
- Tiwari, S., Atluri, V., Kaushik, A., Yndart, A., & Nair, M. (2019). Alzheimer's disease: pathogenesis, diagnostics, and therapeutics. *International journal of nanomedicine*, 14, 5541–5554. <https://doi.org/10.2147/IJN.S200490>



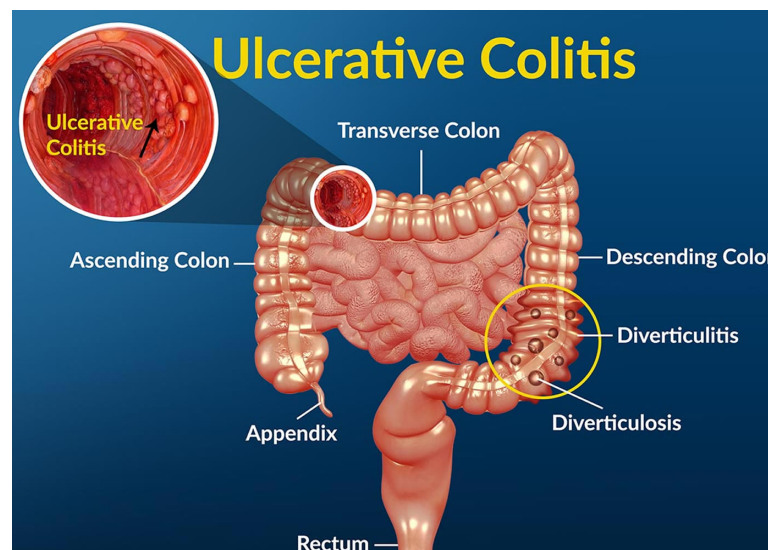
ISNS Case Study

Ulcerative Colitis

By Dr. Tina Bozicnik, M.D., Dr. Norbert Ketskés, M.D., Dr. Dori Naerbo, Ph.D., and Dr. Christina Rahm Ph.D.

Ulcerative colitis (UC) is a type of inflammatory bowel disease (IBD). IBD comprises a group of diseases that affect the gastrointestinal (GI) tract. UC occurs when the lining of your large intestine (also called the colon), rectum, or both become inflamed. This inflammation produces tiny sores called ulcers on the lining of your colon. Inflammation usually begins in the rectum and spreads upward. It can involve your entire colon.

Inflammation causes your bowel to move its contents rapidly and empty frequently. As cells on the surface of the lining of your bowel die, ulcers form. The ulcers may cause bleeding and discharge of mucus and pus. While this condition affects people of all ages, most people develop UC between the ages of 15 and 30 years old, according to the American Gastrointestinal Association. After age 50, there is another



small increase in the diagnosis of IBD, usually in men. The seriousness of UC symptoms varies among people who have the condition. The symptoms can also change over time. People diagnosed with UC may experience periods of mild symptoms or no symptoms at all. This is called remission. However, symptoms can return and become severe. This is called a flare-up. Common symptoms include abdominal pain, increased abdominal sounds, bloody stools, diarrhea, fever, rectal pain, weight loss, and malnutrition.

Researchers believe that UC may be the result of an overactive immune system. However, it is unclear why some immune systems respond by attacking the large intestines and others do not. Factors that may play a role in who develops UC include genes, environmental factors, and other immune disorders. You may inherit a gene from a parent that increases your chance of developing UC. If you have one type of immune disorder, your chance of developing a second is higher. Bacteria, viruses, and antigens may trigger your immune system. UC can be categorized according to the parts of the GI tract that it affects. In ulcerative proctitis, only the rectum is inflamed. It is considered a mild form of UC. Left-sided colitis causes inflammation in the area between the splenic flexure (near the upper part of the colon, where it bends) and the last section of the colon. The last section of the colon, known as the distal colon, includes the descending colon and sigmoid colon. Left-sided colitis is known as distal ulcerative colitis. Extensive colitis is known as pancolitis and causes inflammation throughout the entire colon. It is considered a severe form of UC.

Case Study I

Patient: Female

Age: 39 years old

History: She does not smoke, she is stressed out a lot, and she does not do any type of sports. She had a very bad diet. She was diagnosed with ulcerative colitis 3 years ago. It is an inflammatory disease in which we distinguish between asymptomatic (rest or remission) and symptomatic (also called relapse or recurrence). In this patient, unfortunately, recurrence occurred frequently, every month, with characteristic symptoms. These symptoms greatly affected this patient's quality of life. Symptoms during the relapse period included abdominal pain, usually convulsive, urgent defecation, stimulus, bloody, mucous, purulent stools, diarrhea, fatigue, feeling weak, extremely unwell, and weight loss. Symptoms that occurred during the remission period included weakness, fatigue, bloating, and abdominal discomfort.

Medications: Remission period: sulfalazin 3000 mg/day (3x2/day)

Relapse period: sulfalazin 6000 mg/ day (4x3/day) and steroid (methylprednisolone orally, with a decreasing dose of 24 mg) and mesalamine in the form of an enema, directly into the intestine.

LEGEND:

Proprietary blend 1: Silica, Vitamin C, and Trace Minerals.

Proprietary blend 2: N-acetyl L-tyrosine, Anhydrous Caffeine, L-theanine, Velvet Bean Seed, Pine Bark, Curcumin, and Vitamin D.

Proprietary blend 3: Black Seed Oil, Resveratrol, Turmeric, Raspberry Ketone, Apple Cider Vinegar, Aloe Vera, and D-ribose

Proprietary Blend IV: Vitamin C, Zinc sulfate, and Vitamin D3

Proprietary Blend V: Inulin, Green Banana Flour, Apple Fiber, Bacillus Coagulans, Spirulina, Wheat Grass, Barley Grass, Alfalfa Leaf, Flaxseed, Psyllium Husk Powder, Chlorella, Broccoli, Kale, Spinach, Green Cabbage, Parsley, Aloe Vera, Cayenne Pepper, Blueberry Powder, Pomegranate Powder, and MCT Coconut Oil Powder

Proprietary Blend VI: Vitamin C, Vitamin D, Vitamin K2, Magnesium, OmniMIn AC, Quercetin, NAD.

Lab Tests: High inflammatory parameter (CRP: 98 mg/l, normal up to 5,0) and higher liver enzyme levels; ASAT-95 (U/L) (range 2-35), ALAT-98, (range 2-45), GGTP-152, (range 4-55 U/L) Se Iron 5,1 (range 10, 7-32,2 micromol/l) (iron deficiency anemia)

Hemoglobin: 101 (range 120-160 g/l)

Hematocrit: 0,28 (range 0,36-47 l/l)

Treatment/Method:

Proprietary Blend I: 2x5 drops, morning and evening, for 3 days, then every 3 days then increased by 1-1 drops every 3 days to 2x10 drops daily.

Proprietary Blend II: 1 in the morning for 7 days, then 2, 1 in the morning and 1 in the afternoon.

Proprietary Blend III: ½ sachet in the morning for 7 days then increased to 1 full sachet in the morning for 7 days. Increase dose to 2 sachets daily, 1 sachet in the morning and 1 sachet in the evening.

Proprietary Blend IV: ½ teaspoon in the morning.

Proprietary Blend V: 1 teaspoon in the evening for 7 days, then 1 teaspoon in the morning and 1 teaspoon in the evening.

Proprietary Blend VI: 1 in the morning for 7 days. Then 1 in the morning and 1 in the evening.

Other Advice: She switched to a gluten-free diet. She began to exercise to achieve a positive mental and emotional state (e.g: yoga, meditation, breathing exercises, and stress management)

Results:

After 1 month: fatigue, weakness, and bloating decreased. She was able to reduce the sulfalazine from 3000 mg/ day (3x2) to 1500 mg/day (3x1).

After 3 months: the feeling of discomfort disappeared. She has not had a relapse in the last 3 months. She was able to further reduce the sulfalazine from 1500/day to 500 mg/day (1x1). She is feeling well, there is no pain and her weight has increased.

Control lab tests:

Inflammatory parameter CRP: (98!) 9 mg/l, (normal up to 5,0), liver enzyme levels: ASAT-(95!) 38 (U/L) (range-2-35), ALAT-(98!) 45, (range 2-45), GGTP-(152!) 50, range (4-55 U/L)

Se Iron (5,1) 10,1 (range 10,7-32,2 micromol/l)

Hemoglobin: (101!) 119 (range 120-160 g/l)

Haematocrit: (0,28!) 0,35 (range 0,36-0,47 l/l)

References

- Battistini, C., Ballan, R., Herkenhoff, M. E., Saad, S. M. I., & Sun, J. (2020). Vitamin D Modulates Intestinal Microbiota in Inflammatory Bowel Diseases. *International journal of molecular sciences*, 22(1), 362. <https://doi.org/10.3390/ijms22010362>
- Cheifetz, A. (n.d.). *Ulcerative colitis* . National Institute of Diabetes and Digestive and Kidney Diseases. Retrieved March 3, 2023, from <https://www.niddk.nih.gov/health-information/digestive-diseases/ulcerative-colitis>
- MedlinePlus [Internet]. Bethesda (MD): National Library of Medicine (US); updated 2020 Jun 24. Ulcerative Colitis/ UC ;updated 2020 Jun 10; Retrieved March 3, 2023, from <https://medlineplus.gov/ulcerativecolitis.html>
- Shi, H., Wang, D., Chen, W., Li, Y., Si, G., & Yang, T. (2022). Quality of Evidence Supporting the Role of Supplement Curcumin for the Treatment of Ulcerative Colitis: An Overview of Systematic Reviews. *Gastroenterology research and practice*, 2022, 3967935. <https://doi.org/10.1155/2022/3967935>

