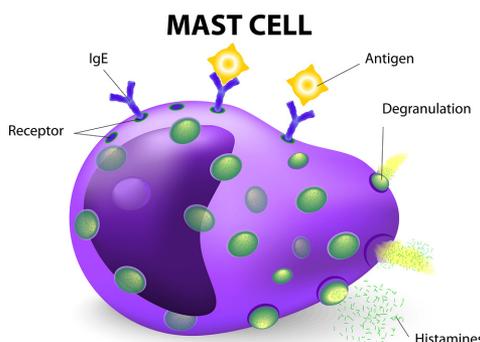


Mast Cell Activation Syndrome: A Key Exploration in Recovering from Chronic Lyme Disease

by Raj Patel, MD, Thalia Farshchian, ND, and Scott Forsgren, FDN-P

Successful treatment of patients with chronic Lyme disease often requires exploring many different factors in order to regain wellness. A focus on antimicrobial strategies alone is rarely enough to move the needle in the direction of health. It is important to cast a broad net in order to maximize recovery from chronic Lyme disease and conditions such as mold illness, chronic fatigue syndrome (ME/CFS), fibromyalgia, multiple sclerosis, and other complex, chronic health issues.

Raj Patel, MD, and Thalia Farshchian, ND, of Medical Options for Wellness (MOW; <http://medicaloptionsforwellness.net>) in Foster City, California, have observed clinically how important it has become to evaluate their patients for mast cell activation syndrome (MCAS). Managing this inflammatory process is often a key exploration in restoring health from chronic Lyme disease and related conditions. In MOW's patient population, over 50% of patients are believed to have MCAS as a component of their ongoing health challenge. In those with Lyme disease and/or mold illness with resulting immune dysregulation, the incidence of MCAS may be as high as 90%.



While MCAS has gained attention in recent years and has become more readily recognized, patients are also far more compromised today than they were five to ten years ago. There are many insults that can contribute to chronic illness, and several of these may serve as triggers for the activation of mast cells, release of histamine, abnormal immune response, and resulting inflammation in the body. No longer does $1 + 1 + 1 = 3$; the synergistic effect of these various triggers makes things far more challenging and adds insult to injury.

In the context of a well-planned treatment protocol, MCAS must be addressed early on in order to minimize inflammation within the body and maximize response to broader

treatment. This approach not only improves the patient's symptoms in the short-term but facilitates treatment of the underlying factors triggering MCAS, which then results in longer-term health improvements and eventual resolution of MCAS.

Mast Cells in Health and Chronic Conditions

Mast cells are a type of white blood cell derived from the bone marrow. They contain basophilic granules that release histamine, cytokines, and other substances that are involved in producing inflammatory and allergic reactions. These reactions help the body in fighting off offending agents and are typically triggered in response to parasites, infections, medications, stress, and other offending agents.

Mast cells are long-lasting and reside primarily in connective tissue. They are also found in large numbers along the epithelial lining in the body including the GI tract and the bronchial mucosa where they frequently serve as an initial line of defense for the immune system. Their normal physiological functions also involve maintaining vascular homeostasis, playing a critical role in wound healing and

angiogenesis, supporting bone growth and remodeling, and in maintaining the integrity of the blood-brain barrier.

The pathophysiology of mast cells in the development of disease is still a growing and evolving area. Mast cell diseases vary in severity and can be segregated into two general categories. The first, mastocytosis, involves overproduction of genetically altered mast cells and ranges from localized benign forms, as in cutaneous mastocytosis, to serious systemic malignancies as in mast cell sarcoma. The second category, mast cell activation syndrome, the focus of this article, is a relatively newly recognized condition that has received attention mostly in the last 10-15 years.

MCAS involves inappropriate, excessive, or episodic release of histamine and other allergic compounds. Although less serious, it can be significantly debilitating with wide-ranging systemic symptoms involving practically every organ system in the body. The diagnostic criteria are still evolving and are discussed later in this article.

MCAS is becoming increasingly recognized as a major comorbid condition accompanying Lyme disease and other tick-borne infections, parasitic infestations, chronic viral reactivation syndromes, multiple chemical sensitivities, and sick building syndrome. Proper recognition and treatment of MCAS can dramatically improve the treatment outcome of these chronic conditions.

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In MCAS, normally protective mast cells can become activated by numerous triggers, leading to an overproduction and release of histamine and other chemical mediators that result in increased inflammation throughout the body. There is an exaggerated response of the mast cells to a trigger, which leads to uncontrolled inflammation and resulting symptoms—though the number of mast cells is generally not notably increased.

MCAS symptoms may include rashes, hives, flushing, itching (with or without rashes), bloating, reflux,

nausea, diarrhea, low blood pressure, shortness of breath, heart palpitations, headaches, brain fog, anxiety, fatigue, weight loss, weakness, dizziness, osteoporosis, and many others.

In alignment with what is understood about autoimmune disease, MCAS is an immune system misdirection. As the to-do list of the immune system becomes longer and longer, the immune system becomes dysregulated and unable to function with precision.

Fun Fact: Mast cells were first described by German immunologist and microbiologist Paul Ehrlich. The term “mast cell” comes from the German word “mastzellen” which means “fattening,” as mast cell granules were initially incorrectly believed to be nourishing. A common co-infection of Lyme disease, Ehrlichia, was also named after him.

In those with conditions such as Lyme disease and mold illness, the immune system may become imbalanced, resulting in a shift from Th1 to Th2 (types of T helper cells). This imbalance in favor of Th2 leads to autoimmune shifts, hyper-allergic responses, and a microbial backlog that the body becomes unable to address. Mast cell degranulation inhibits Th1 immunity while promoting a Th2 immune response leaving patients feeling allergic, inflamed, and unable to respond adequately to chronic infections.

Triggers

Mast cell activation syndrome (MCAS) and histamine intolerance have been discussed in the medical literature for over a decade. A connection between *Borrelia burgdorferi*, the causative agent in Lyme disease, and the activation of mast cells was discussed in a study in 1999. However, understanding of the clinical significance of MCAS in conditions such as chronic Lyme disease and mold illness has been gaining only in recent years.

One of the challenges in treating MCAS is that the list of potential triggers is extensive and may include the following: mold exposure, parasites, EMR/EMFs, viruses and retroviral activation, Lyme and coinfections, opportunistic infections such as *Chlamydia pneumoniae* and

Mycoplasma pneumoniae, heavy metals and other environmental toxins, medications, supplements, hormones, foods, temperature changes, physical injury, and physical, mental, or emotional stress or trauma—among others.

A significant percentage of MOW's patients with chronic Lyme disease have experienced an inflammatory response from a current or past exposure to environmental mold from water-

damaged buildings. A primary trigger for mast cell activation is mold exposure in these patients. To minimize potential MCAS triggers, the environment must be evaluated and remediated early on in patients with mold illness in order to rein in inflammation within the body.

Mast cells are immune cells intended to protect us from parasites and other invaders, and thus, parasites are often a key trigger. Further, parasites may serve as sponges for heavy metals, which are also triggers for MCAS; thus, when treating parasites, the potential for additional release of heavy metals and increased mast cell responses must be anticipated. Aggressive heavy metal detoxification interventions may aggravate MCAS.

Continuing with the environment as a trigger for MCAS, exposure to electromagnetic radiation (EMR/EMF) is becoming a more commonly recognized trigger for mast cells. Theo Theoharides, PhD, MD, has stated that mast cells fire ten times more in the presence of a cell phone. There is a connection between EMR/EMF and mold as well. The more threatened or irritated mold is by its environment, the more toxins it produces to protect itself. Addressing EMR/EMF in the environment may be another tool to further calm down both mold reactivity and MCAS.

Viruses, retroviral activation, *Borrelia*, Lyme co-infections (such



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➤ as Bartonella, Babesia, and others), Chlamydia, Mycoplasma, and other microbial burdens may serve as triggers for activation of the mast cells leading to further histamine release and higher levels of inflammation. Eradicating these infections helps in calming down mast cell reactions in some patients.

Histamine-containing or histamine-liberating foods can trigger numerous symptoms in MCAS patients, often resulting in patients tolerating very few foods. Some medications, supplements, and hormones may also serve as triggers. MCAS is a key player in why many patients are often unable to tolerate the very substances that are needed to get them well.

Temperature changes such as moving from one environment to another or encountering hot or cold water in a shower can trigger MCAS. Almost any type of stress including physical, mental, or emotional stressors can serve as a trigger.

Some contend that MCAS is a life-long condition. If one approaches treatment primarily with tools that attempt to calm hyperactive mast cell responses and reduce histamine, the condition may in fact persist. However, if the underlying triggers are explored and addressed simultaneously, MOW has found that the condition often resolves without the need for indefinite interventions.

The key message is to rely less on supplements and medications focused on treating MCAS and to focus instead on addressing the underlying triggers; simultaneously supporting stabilization of mast cells and reduction of histamine in the body is essential. In most patients, multiple triggers may be present and will require broad treatment. While an MCAS focus is often very helpful in the short-term, long-term treatment success requires exploration of the underlying drivers of the condition.

Testing

Clinical clues for recognizing MCAS frequently stem from a patient's symptoms when consuming fermented

foods and high histamine foods such as citrus, tomatoes, and spinach. MCAS is much easier to recognize when the presentation is more severe; milder cases may overlap with symptoms of Lyme disease and mold illness and can be more of a challenge to identify. MOW keeps a high index of suspicion in their patient population.

Testing for MCAS is imperfect, and several tests are often needed to identify MCAS. The following tests have been helpful:

- Matrix metalloproteinase-9 (MMP-9) (LabCorp; serum)
- N-Methylhistamine (Quest; 24-hour urine)
- Histamine (LabCorp; plasma)
- Tryptase (LabCorp; serum)
- Prostaglandin D2 (PGD2) (Quest; 24-hour urine)
- Chromogranin A (Quest; serum)

Prior to collecting samples for these tests, a provocation is generally recommended whereby the patient consumes foods known to be high in histamine, resulting in the triggering of their MCAS-associated symptoms. Many of these markers are very transient in the system; and without provocation immediately prior to testing, false negative test results are not uncommon. Even with a provocation, negative test results do not rule out the condition.

When clinical symptoms are not obvious, all of these tests may be used in an attempt to document the condition. Otherwise, clinical presentation is often combined with MMP-9, n-methylhistamine, histamine, and tryptase to arrive at a diagnosis of MCAS. Even then, MCAS is often a clinical diagnosis, and treatment may be explored in absence of positive laboratory findings.

MMP-9 in MCAS

MMP-9 (matrix metalloproteinase-9) has been the best clinical and most consistently reliable indicator for MCAS at MOW. MMP-9 is readily available from LabCorp. While it has historically been used as an indicator of biotoxin illness, MOW has found it a useful

marker in exploring MCAS as well. Similar to other markers, a provocation whereby the patient consumes high histamine foods prior to the blood draw may be recommended.

MMP-9 Level	Interpretation
<= 250	Normal; MCAS unlikely
251-399	Lyme, mold, or mild MCAS
>= 400	Uncontrolled inflammation from MCAS likely

MMP-9 elevations can be found in those with Lyme disease or mold illness from water-damaged building exposures. However, these generally lead to mild elevations in absence of MCAS. When MCAS is present, MMP-9 elevations are often much higher. At MOW, MMP-9 has been a "home run" in identifying those with MCAS clinically.

The beauty of MMP-9 is that it can be used to monitor improvement of the MCAS condition once the diet, supportive supplements, and concurrent treatment of triggers are in place.

Low-Histamine Diet

One of the cornerstones of MOW's overall treatment approach is to reduce inflammation as much as possible early on and keep it low throughout the entire course of treatment. A significant portion of a patient's systemic inflammation is often driven by MCAS and histamine intolerance. Thus, reduction of MCAS triggers is a key to successful treatment, and one of the most important areas to explore early on is diet.

Patients are often instructed to incorporate a low-histamine diet from the onset in support of inflammation reduction when MCAS is suspected. Avoiding leftovers and freezing foods in single-use portions for peak freshness is a key component of the diet. Eating out is difficult due to lack of control over ingredient freshness.

Many of the things that have historically been considered healthy options are not ideal for those with MCAS. Fermented foods, bone broth, and avocados are examples of foods that are generally considered healthy, but these are often best avoided with MCAS. Specific details of the low-

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histamine diet recommended to MOW patients are included elsewhere in this article. It is critical to be as strict as possible with the dietary interventions early in the course of treatment.

If there are no improvements in symptom presentation after a patient has been on the diet for a month, the likelihood of a notable mast cell contributor is minimal. This scenario may be observed in those with an initial MMP-9 below 400. MMP-9 is often redrawn within two-to-four weeks after starting the dietary interventions. Most patients do see reduction of MMP-9 within a month of implementing a low-histamine diet. MMP-9 reductions of over 100 ng/ml have been observed in as little as four days on the diet; though maximal decline can take a full month or longer.

In the few where MMP-9 levels were elevated and have not reduced with the dietary interventions, it becomes important to explore other potential triggers such as mold exposure, EMR/EMF exposure, or chronic infections. The triggers for the MMP-9 elevation in these cases may be less from digestive and gut-associated issues and more from environmental exposures or microbial overgrowths.

As total histamine load reduces in the first month, many patients notice significant improvements in their symptoms. At least 70% see symptomatic improvements with the dietary changes. Reductions in headaches (including migraines), abdominal bloating, joint pain, and anxiety are often profound. Even if symptomatic changes are not observed, reduction in inflammatory markers often serve as an indication of success of the dietary changes. When combining those who see symptomatic improvement with those that see improvements in MMP-9 levels, approximately 85% of patients benefit from the dietary changes. Additionally, as inflammation reduces, the treatment toolbox broadens in terms of the items that a patient may tolerate, and the response to treatment for underlying triggers is expedited.

While mast cells are involved in the production of TGF- β 1 (transforming growth factor beta 1; another marker

commonly evaluated in those with biotoxin illness), MOW has not observed a correlation with dietary changes leading to reduction in TGF- β 1 on the same scale as what has been observed clinically with MMP-9.

Dr. Thalia says, "The primary goal is to get people off the ground knowing

MCAS leads to inflammation in the GI tract. This inflammation leads to rapidly increasing food reactions, which may then set the stage for SIBO, and further lead to malabsorption or maldigestion. SIBO is the result of an overgrowth of bacteria in the small intestine, and imbalances in the microbiome can be a

The key message is to rely less on supplements and medications focused on treating MCAS and to focus instead on addressing the underlying triggers; simultaneously supporting stabilization of mast cells and reduction of histamine in the body is essential.

there will be some initial turbulence; diet is a key component of this. As inflammation reduces and the plane is off the ground and at altitude, you are then cruising through the remainder of your treatment. Unaddressed MCAS and mold exposure are the two key factors that keep people from getting to altitude; addressing these factors significantly reduces the turbulence of the ongoing protocol."

Most patients will remain on the diet for at least a year and may then be able to start reintroducing foods with fewer reactions as the key drivers of their MCAS have been addressed. Patients unwilling to comply with the dietary recommendations may find themselves stuck in a cycle of limited progress.

Gastrointestinal Health in MCAS

MOW views gastrointestinal inflammation and intestinal hyperpermeability, or leaky gut, as a symptom of MCAS as well as mold illness, Lyme disease, viruses, and other factors. It is the immune system dysregulation and inflammation from these conditions that ultimately results in leaky gut. Attempting to treat the leaky gut without addressing the underlying triggers that led to it is generally not a helpful long-term strategy. To complicate matters, once intestinal hyperpermeability is present, this may lead to further activation of the immune system and MCAS. It becomes a self-propagating, vicious cycle.

trigger for MCAS.

Issues with the nervous system in the gastrointestinal tract can lead to dysmotility. In complex cases of SIBO, Lyme and coinfections are often underlying issues that need to be explored in order to lead to long-term resolution. Bartonella may play a role in SIBO and other GI-associated issues. In patients with bloating after meals, this may not be entirely from SIBO alone, but may be the result of MCAS; thus, simultaneously exploring both SIBO and MCAS in these situations is often important. The majority of MCAS patients have some degree of SIBO and gastrointestinal inflammation.

In order to break the cycle, a clean, low-histamine diet must be implemented, inflammation must be reduced, SIBO must be treated, and immune-modulating or desensitization strategies put in place to calm the body's response to various foods.

Many probiotics add fuel to the fire in those with MCAS and histamine intolerance. Certain strains of beneficial flora found in many probiotic supplements, particularly some Lactobacillus strains, are histamine producers. In patients with MCAS, these are often best avoided. Given the importance of optimizing the microbiome to minimize MCAS over time, probiotics are still an important consideration. However, the key is selecting those that will not further exacerbate the problem. MOW often



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uses spore-based probiotics, soil-based probiotics, or those with specifically selected strains known not to increase histamine. These may include: Seeking Health® ProBiota™ HistaminX, Microbiome Labs MegaSporeBiotic™, Corganic GutPro®, Researched Nutritionals® CoreBiotic™, and others.

A promising tool in the area of improving gut health is oral BPC-157, which may help heal the gut barrier, improve leaky gut, and modulate immunity and inflammation. In patients

with overlapping SIBO and MCAS, LDN (low-dose naltrexone) may also be helpful as it can help with motility and modulation of the immune system. Digestive enzymes may be required to help with the breakdown of food, and stomach acid may be low and require support to improve digestive defenses.

MOW is further exploring the possibility that, in those with MCAS, the body may be reacting to certain strains of bacteria in the gastrointestinal tract including beneficial flora such as

Bacteroides. The use of LDA (low dose allergen immunotherapy) to modulate the body's immune response to its own microbiome is being further explored as another tool for reducing MCAS in these patients.

Treatment

Successful treatment of MCAS consists of incorporating a low-histamine diet (see below), modulating immune response and stabilizing mast cells, and simultaneously addressing underlying triggers. All of these are key components of resolving the condition.

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Type of Food	Foods Allowed	Foods Restricted
Meat, Poultry, Fish	Immediately frozen meat including ground meat Any freshly caught, gutted and cooked fish Plain gelatin; Pasture-raised eggs; Pasture-raised chicken	Ground meat; All Shellfish, Roe and Caviar All Processed Meats (e.g. ham, smoked meats) Canned Meats/Fish (e.g. tuna); All pickled eggs, meat, and fish Flavored gelatin; Mincemeat
Vegetables	All pure, fresh/frozen vegetables/juices except those listed to the right Avocado (peak freshness; Broccoli/Broccolini; Zucchini (peeled) Cauliflower/Romanesco; Celery; Corn; Cucumber (peeled) Brussel sprouts; Lettuce; Cabbage; Asparagus; Kale Fennel; Carrots (peeled); Parsnip (peeled)	Avocado (overly ripe or exposed to air for extended time) Broad beans; Green beans; Eggplant; Mushrooms; Pumpkin; Sauerkraut; Spinach; Tomato (including sauce/ketchup); Over-ripe vegetables; Pickled vegetables; Packaged salad mixes; Packaged, peeled vegetables; Potato; Bell peppers; Root vegetables (peeled); Sweet potato
Fruit	All in-season pure, fresh/frozen fruits/juices except those listed to the right Melons (Watermelon); Apple (skinless); Pear (skinless); Fig Passion fruit; Plantain; Pomegranate (fresh peeled/frozen) Rhubarb; Starfruit; Longans; Lychees; Frozen peaches (skinned) Frozen berries: cranberries, blueberries, blackberries, raspberries	Citrus: lemons, limes, oranges, grapefruit Stone fruit: peaches, nectarines, plums, apricots Berries: cranberries, blueberries, blackberries, raspberries, strawberries Bananas; Grapes; Kiwi; Currants; Dates; Raisins; Papaya; Mangos; Pineapples; Dried fruit including prunes/raisins, etc.; Passionfruit; Watermelon
Dairy	Anything without microbial cultures (e.g. ricotta, feta, mozzarella) Ice cream free from restricted ingredients Cream; Plain Pasteurized Milk – skim/lactose free/goat milk Substitutes – Rice and Coconut Milk*	Fermented milk products; Cheese; Sour cream; Buttermilk; Yogurt; Kefir
Grains	Unbleached Flour/Grain; Biscuits; Muffins; Rice noodles; Oats Puffed rice crackers/cakes; Millet; Rice (freshly made) Tortilla chips (without restricted ingredients); Quinoa (freshly made)	Bleached flour Yeast-risen breads/baked goods; Bread (including gluten free); Pizza dough; Buns; Pita bread; Croissants; English muffins; Crumpets; Cracker with yeast
Legumes	Lima beans Dried beans: Chickpeas; Pinto beans; White beans; Navy beans Black-eyed peas; Black beans; Lentils; Split Peas	Green peas; Sugar/sweet peas; Red beans; Soybeans (including soy milk); Tofu Fermented soy: Soy sauce; Bean curd; Soybean paste; Shrimp paste; Chili soybean paste; Miso; Teriyaki sauce
Nuts	All plain nuts and their flours except those listed to the right (e.g. unbleached almonds); Macadamia nuts (small amounts)	Walnuts; Pecans; Cashews; Coconuts*; Sunflower seeds (small amounts); Flax seeds (small amounts)
Fats and Oils	All cold pressed oils: Extra virgin olive oil; Jojoba oil Butter (without rancidity); Ghee (without rancidity)	Processed oils Coconut oil*
Sweets and Sweeteners	Maple syrup	Unpasteurized honey Chocolate/cocoa
Spices and Seasonings	All fresh, frozen, or dried herbs except those to the right Baking powder; Baking soda; Dried turmeric (stored in refrigerator) Dried herbs (stored in refrigerator); Fresh herbs; Cream of Tartar	Vinegar Anise; Black pepper; Cinnamon; Chili powder; Curry; Cayenne; Nutmeg; Baker's yeast; Nutritional yeast; Brewer's yeast; Prepared mustards
Beverages	Plain milk; Pure juices of allowed fruits/vegetables Plain/carbonated water; Coffee (fresh ground and brewed) Fresh herb teas	Sodas; Apple cider; All caffeinated teas; Alcohol; Non-alcoholic beers; Herbal Teas

*Coconut is not tolerated by all MCAS patients.

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A low-histamine diet is pivotal in successful treatment outcomes for the majority of patients with MCAS. MOW has found that while treatment options discussed in this section can be very helpful, they build on the foundation of dietary strategies; they are not a replacement. Consider a sinking boat

Nutraceutical Interventions

Natural tools that are often helpful include the following: quercetin, luteolin, vitamin C, Seeking Health™ Probiota HistaminX, Algonot NeuroProtek®, Gaia Herbs Holy Basil Leaf, Mirica™ (Palmitoylethanolamide and Luteolin) or US Enzymes SunBalance™, CBD,

A helpful app “ALL I CAN EAT” is available for iOS and Android; more information available at <https://all-i-can-eat.com>

with a hole in the bottom; mast cell stabilizers and antihistamines are akin to bailing out the water with a Dixie® cup while the dietary interventions plug the hole. Approaching treatment solely from a medication and supplement perspective generally results in less than optimal results.

Once a patient has incorporated a low-histamine diet, mast cell stabilizers and antihistamines are introduced to further calm the immune dysregulation and resulting inflammatory response.

Low-Histamine Dietary Guidelines

Key points:

- No leftovers; freeze everything in individual portion sizes
- No fermented foods: kimchi, sauerkraut, kombucha, pickles, relish, fermented soy foods
- No high histamine foods from the restricted food list (those in *italics* may or may not be triggers)

Pharmaceutical Interventions

H1 blockers such as cetirizine (Zyrtec), loratadine (Claritin), levocetirizine (Xyzal), fexofenadine (Allegra), or chlorphenamine (Chlorphen) may be used. H2 blockers such as famotidine (Pepcid) or ranitidine (Zantac) are rarely used due to the resulting reduction of stomach acid, potentially inviting other problems longer-term. Leukotriene inhibitors such as montelukast (Singulair) may be helpful. Mast cells stabilizers such as cromolyn sodium (Gastrocrom) or ketotifen can provide patients with notable improvements.

black cumin seed oil, and other anti-inflammatories. Pantethine supports the process of acetylation and may assist in metabolizing and detoxifying histamine in the body as well.

Combination products that may be helpful include QuickSilver Scientific® Hista-Aid™ or Beyond Balance™ MAST-EASE™. Researched Nutritionals HistaQuel™ is a newer option in the toolbox. DesBio Histamine homeopathic has been of clinical value in extremely sensitive patients.

Surprisingly to some, DAO has not risen to the top of the list of helpful interventions for most patients and is only occasionally used; it is useful in the 10-15% of MOW patients with an inherent deficiency in the production of DAO presumably associated with a genetic predisposition.

Optimizing liver function can be a helpful strategy in breaking down histamine in the body. Tools such as Energetix® Hepatic Tone, BioRay® Liver Life, Beyond Balance™ TOX-EASE™, Pure Encapsulations® Liver GI Detox and others may be used in support of this goal and are synergistic with other interventions used.

Higher levels of histamine are often associated with low methylation function. Gently supporting methylation can help the body to reduce histamine; aggressive methylation support may lead to higher levels of inflammation as toxins begin to move and overwhelm the body's drainage pathways and is not recommended. Simultaneously supporting methylation and addressing microbial burden generally leads to an

opening of the detoxification pathways, including supporting the excretion of heavy metals from the body without aggressive interventions.

Environmental and Microbial Support Interventions

Beyond the interventions that may support stabilization of mast cells and reduction of histamine, the underlying triggers of the MCAS condition must be simultaneously addressed. This may include environmental remediation from mold exposure in mold illness patients, addressing parasites and other microbial burdens including Lyme disease and co-infections, reducing EMR/EMFs, detoxifying heavy metals and other environmental toxins, limbic system retraining in those with stress and emotional trauma, and others as previously mentioned.

Reduction of EMR/EMF exposure is emerging as another therapeutic intervention in managing the activation of mast cells. MOW recommends turning off Wi-Fi, avoiding cordless phones, minimizing cell phone usage, mitigating dirty electricity, and implementing an EMR/EMF-reducing canopy using silver-lined cloth in the sleeping location. This often promotes a cellular parasympathetic state that leads to increased detoxification and unloading of toxins, including heavy metals. When done too quickly, however, this can overwhelm the body's drainage pathways and further trigger MCAS responses. Thus, a very specific protocol is used for the introduction of the shielding canopy in order to avoid an exacerbation of symptoms. Ensuring that binders and drainage remedies are being used and supporting methylation can make this process much smoother.

Emotional Support Interventions

The average Lyme and/or mold illness patient has been through tremendous emotional trauma. Whether this trauma occurred prior to the illness and may have set the stage or is the result of experiencing the illness itself, the emotional trauma often results in significant abnormal wiring in the brain. Meditation and other tools,

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➤ which may help the body to shift to a parasympathetic nervous system state, can be very helpful in reducing MCAS symptoms.

Limbic system retraining (or rewiring or rebooting), such as with Annie Hopper's DNRS (Dynamic Neural Retraining System™), has led to dramatic improvements in many patients. Some patients experience an 80-90% improvement in their condition in the first few months; others experience non-specific improvement in overall well-being. The extent to which this may

be helpful depends on how much of the condition is the result of limbic system dysfunction. Additionally, actual threats such as living in a moldy home should be addressed prior to incorporation of a limbic system retraining methodology.

Conclusion

In those patients with a chronic illness such as Lyme disease or mold illness, MOW has found MCAS to be a key area of exploration in regaining an improved state of health. Overall patient response to treatment has improved

significantly since incorporating MCAS therapeutic interventions into MOW's broader treatment approach.

MCAS itself is not the core issue; it is a response to deeper issues triggering a misdirected, inflammation-producing immune response. In approaching treatment of a condition such as chronic Lyme disease, exploring and addressing MCAS while simultaneously addressing underlying triggers often results in patients finding higher ground. MCAS is a treatable condition that can be entirely resolved, and health can be fully restored. ◆



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Thalia Farshchian, ND, (<http://medicalexoptionsforwellness.net>) is an accomplished healthcare practitioner who specializes in the field of integrative medicine. Dr. Farshchian completed her doctorate in naturopathic medicine at the National College of Natural Medicine and her BA in psychology from the University of California, Santa Barbara. She has advanced certifications in nutritional intravenous therapy and Herscu Model of Homeopathy.

She began her practice with a focus on digestive, hormonal, and autoimmune conditions. In the process of working with patients affected by these conditions, she began to see an infectious correlation with all of the above conditions. Over the past three years, she has been studying and implementing diagnostics and treatment in chronic viruses, Lyme disease and co-infections, and mold illness and CIRS (also known as Chronic Inflammatory Response Syndrome).



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