Mold and Autism

What is the Relationship?

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Mold is the name used to refer to multiple types of fungi that are naturally found both outdoors and inside homes and buildings. Mold is usually harmless outdoors. However, in damp, warm and humid environments, such as a leaky basement or under an unsealed window, mold can grow and become a health hazard. As mold grows, it releases mycotoxins in the air, which can then be inhaled. These mycotoxins cause a variety of health concerns, including allergies, stuffy nose, wheezing, red or itchy eyes and cough, and may also trigger asthma. In some individuals, mold causes a severe inflammatory response.

The most common types of mold that are found indoors include cladosporium, penicillium, alternaria, stachybotris, and aspergillus. It is estimated that 58 percent of buildings and homes in the United States have water damage, which means there is a strong possibility that many families are affected by mold toxins at home, school and work.

Mold and Autism

Autism spectrum disorder (ASD) is a complex neurodevelopmental disorder. Most experts agree that autism has a strong component of immune dysregulation that is often triggered by environmental factors, such as food- and water-borne toxins, chemicals, medication overuse and infectious agents.

Immune dysregulation makes it more likely that a child will suffer from allergic reactions, autoimmunity, frequent infections with both viruses and bacteria and an excessive inflammatory response. Exposure to mold toxins is a significant cause of immune dysregulation.

Mold and Neuroinflammation

Neuroinflammation is an important concept in understanding the relationship between any type of toxin exposure and autism. Research suggests that the cognitive and developmental delays associated with ASD stem from neuroinflammation. Mycotoxins and some other toxins enter the body and tend to bind to lipid and nerve tissues. This directly impairs neuronal function. Additionally, the immune system is stimulated to produce inflammatory products, which in turn cause even more injury to the already damaged nervous system.

In most individuals exposed to mold toxins, the toxin is “tagged” and identified by the body’s immune system. The body makes antibodies to remove the offending toxins. However, about 22 percent of the population has a set of immune response genes (human leukocyte antigen genes) that will **not** form antibodies to these biotoxins. Their bodies cannot efficiently remove mycotoxins. Instead, the innate immune system creates an extreme inflammatory response that can affect all body systems including the brain.

In adults, this is called chronic inflammatory response syndrome (CIRS).

The symptoms of CIRS can include the following:

Children exposed to a toxic environment may have some of the symptoms listed above, but may not be able to describe how they feel. Some of the obvious clues in a child include:

- allergies; histamine sensitivities; mast cell disorders
- frequent or chronic upper respiratory infections; impaired immune function
- inflammatory disorders, including PANDAS/PANS symptoms.

Mold illness is also called biotoxin-mediated illness or chronic inflammatory response syndrome in water-damaged buildings (CIRS-WDB). Mold is the most common source of CIRS, but the same illness can be caused by Lyme disease, the bite of a brown recluse spider, a brain injury, and a number of other less common toxins. The symptoms are indistinguishable from each other. This means you cannot tell from the symptoms what was the source of the toxic or infectious exposure. This is why history and a thorough examination of the home become essential.

Currently, there is no scientific evidence that mycotoxins cause autism. The causation appears to be multifactorial. However toxic exposures are known to be contributors, and can certainly create a cascade of health problems to accompany the developmental delays.

Treatment for Mycotoxins

If mycotoxins are suspected, it is crucial for a child with autism to see a biomedical or functional medicine physician, preferably one who is Medical Academy of Pediatrics Special Needs (MAPS) trained (https://www.medmaps.org). These doctors are trained in addressing the unique medical needs of the special needs population. Adult patients should seek out a doctor who is familiar with the work of Dr. Ritchie Shoemaker, MD, a leading researcher in the areas of CIRS, mycotoxins and Lyme disease.

Testing for Mycotoxins

It is important to have both the individual and the home tested for mold/mycotoxins.

To test the home, an Environmental Relative Moldiness Index (ERMI) test can be performed by a professional. This test uses swabs from around the home and scores the mold spore counts. A score of above two is cause for concern if individuals in the home are genetically susceptible.

To test an individual, physicians will begin by obtaining a comprehensive history of the patient's symptoms and travels. This will be followed by laboratory testing. Lab testing for an individual with suspected mycotoxins is still being developed, and there is not one blood test that will identify if an individual has a mold-related illness. Since mycotoxins, Lyme disease and PANDAS/PANS can have overlapping symptoms, such as CIRS, most clinicians will order a variety of tests in an attempt to determine the cause.

These include:

- **HLA GENOTYPING** (DETERMINES SUSCEPTIBILITY)
- **COMPLEMENT C4a** (IDENTIFIES MOLD EXPOSURE IF ELEVATED)
- **COMPLEMENT C3a** (IDENTIFIES BACTERIAL INFECTION IF ELEVATED)
- **MYCOTOXIN TESTS** (MEASURES LEVELS OF MYCOTOXINS IN URINE)
- **LYME/COINFECTIONS TESTING** (IF THIS IS SUSPECTED)

Additional lab work can identify classic signs of inflammatory illness. These include:

Vasoactive Intestinal Polypeptide (VIP)
Melanocyte Stimulating Hormone (MSH)
Transforming Growth Factor Beta–1 (TGF Beta-1)
Antigliadin (AGA IgA/IgG)
Adrenocorticotropic Hormone (ACTH)/Cortisol
Vascular Endothelial Growth Factor (VEGF)
Antidiuretic Hormone (ADH)/Osmolality
Matrix Metallopeptidase 9 (MMP-9)
Leptin
Nasal culture to test for Multiple Antibiotic Resistant Coagulase Negative Staphylococci (MARCoNS).

Treatment for Biotoxin-mediated Illnesses (Lyme or Mycotoxin)

If mold exposure is found to be present, there are several key steps for treatment.

1. Families and individuals exposed to mycotoxins must remove themselves from the source. Once the mold has been remediated and the house has been thoroughly cleaned, the family can return to the home. The ERMI score must be below two.
2. If Lyme disease is present, it must be treated with antimicrobials/antibiotics.
3. Binding therapy should be used to remove biotoxins. Without this critical and often overlooked step, a person who has become ill will not recover fully. There are binding medications available that your physician will recommend. These medications have a charge and a structure that attract the negatively charged mycotoxins. Biotoxins are bound and eliminated in the stool.
4. If a MARCoNS bacterial infection (bacterial infection in deep nasal passages) is present, treat it with nasal sprays recommended by your physician.
5. Anti-inflammatory treatments will help reduce harmful mediators. Your physician can recommend varying medications, herbs and nasal sprays to reduce the inflammation caused by mycotoxins.

When a child with an inflammatory disorder is treated effectively, the neuroinflammation will be reduced. As the brain inflammation is reduced and the immune system is normalized, parents typically see an improvement in cognitive performance, developmental progress, sleep, behavior, and overall stability. Additionally, as mold causes so many problems for the immune system, parents also tend to see an improvement in immunity to common illnesses and a reduction in overall reactivity.

It is important for parents to understand the symptoms of various toxic exposures. Mycotoxins are the primary focus of this article, but parents should also learn more about the connections between Lyme disease, PANS/PANDAS, and other infections as these are commonly seen in children with autism spectrum disorder.

Many children with autism have underlying biomedical conditions that exacerbate the symptoms of this neurodevelopmental disorder. Parents should find out more about these conditions and take appropriate action if they have concerns.

For more information about the topic of biotoxin-mediated illnesses, or if you think you may have CIRS, see www.survivingmold.com, or www.BiotoxinJourney.com.

Sources

World Health Organisation (WHO) Europe. (2009). WHO Guidelines for Indoor Air Quality: Dampness and Mould.

Heyman, A. *CIRS*, parts 1-4. Podcast: Wholistic Matters. May 16, 2018.

Ryan, J.C. and Shoemaker, R.C. (2016). RNA-Seq on patients with chronic inflammatory response syndrome (CIRS) treated with vasoactive intestinal peptide (VIP) shows a shift in metabolic state and innate immune functions that coincide with healing. *Medical Research Archives*, 4(7).

Shoemaker, R.C., Heyman, A., Mancia, A. and Ryan, J.C. (2017). Inflammation Induced Chronic Fatiguing Illnesses: A steady march towards understanding mechanisms and identifying new biomarkers and therapies. *Internal Medicine Review*, 3(11).

Julie Logan, D.C., specializes in helping children with the symptoms of autism, ADD/HD, PANDAS/PANS, food sensitivities, methylation defects, gastrointestinal issues, and environmental illnesses. She is fully certified by the Medical Academy of Pediatrics Special Needs (MAPS).

Before earning her medical degree, Dr. Julie Logan was introduced to the world of medicine as a patient. After being diagnosed with Hashimoto's autoimmune thyroiditis, she began treatment with a chiropractic physician and soon recovered from the disorder. As a concerned mother, Dr. Logan was pushed further into the medical world. Educators began telling her that her older son showed signs of ADHD and her younger son developed autism. Like so many other parents, Dr. Logan was plunged into the struggle to rescue her sons. She watched their amazing paths of recovery through chiropractic care and nutritional therapies, and soon she discovered an incredible truth: the human body has the power to heal itself when given the right care.

Dr. Logan has worked in the field of environmental medicine, addressing biotoxin-mediated illnesses, such as mold exposure and sick building syndrome. Her chiropractic background gives her insight into correcting the dysregulation of the central nervous system, known as dysautonomia.

She obtained her undergraduate degree at Wheaton College and completed her physician's degree at the National University of Health Sciences in Lombard, graduating as valedictorian of her class. She currently also works in private chiropractic practice in Warrenville to further serve the health needs of her patients.