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Chronic Inflammatory Response Syndrome (CIRS)

Understanding & Managing

What is Chronic Inflammatory Response Syndrome (CIRS)?

Chronic Inflammatory Response Syndrome *(CIRS)* is a complex, multi-system, multi-symptom illness that results from exposure to a biotoxin in genetically susceptible individuals. These biotoxins trigger an abnormal and unregulated inflammatory response driven by overexpression of cytokines produced by the innate immune system. High levels of these circulating biomarkers lead to dysregulation of multiple downstream neuropeptides and hormones resulting in the complicated clinical presentation seen in patients with CIRS.

Key Characteristics

- **Triggered by Biotoxins**
  - Commonly from mold exposure, but also other sources like bacteria, algae, and certain types of fish.
- **Chronic Inflammation**
  - Persistent and excessive innate immune response activation leading to inflammation.
- **Multiple System Impact**
  - Affects various systems including neurological, respiratory, gastrointestinal, and musculoskeletal.

Symptoms of CIRS

Symptoms can vary widely from person to person, but often include:

Fatigue
Weakness
Aches/Muscle cramps
Sharp pain
Headache
Light sensitivity
Red eyes
Blurred vision
Tearing
Sinus problems
Cough
Shortness of breath
Joint pain
Morning stiffness
Memory issues
Difficulty with focus/concentration
Word finding difficulties
Decreased assimilation of new knowledge
Confusion
Disorientation
Skin sensitivity
Mood swings
Sweats (especially night sweats)
Temperature regulation or dysregulation problems
Excessive thirst despite frequent water intake
Static shocks
Numbness
Tingling
Vertigo/Dizziness
Metallic taste
Abdominal pain
Diarrhea
Tremors
Unusual pain
Migraine/facial pain
Appetite swings
Increased urination/nocturia

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Identifying & Testing for Chronic Inflammatory Response Syndrome (CIRS) As A Patient

- Should I Test For CIRS?
- Do you have known biotoxin exposure?
  (tick borne infection, exposure to water damaged building/WDB, spike protein toxicity)
- Have you taken & failed Visual Contrast Sensitivity *(VCS)* Test, *www.vcstest.com*

Testing Protocol For CIRS

Lab Test	Purpose/Relevance for CIRS
HLA (Human Leukocyte Antigen)	Genetic susceptibility
VIP (Vasoactive Intestinal Peptide)	Neuroregulatory & immune function
MSH (Melanocyte Stimulating Hormone)	Neurohormone involved in inflammation
VEGF (Vascular Endothelial Growth Factor)	Blood vessel growth & inflammation
MMP9 (Matrix Metallopeptidase 9)	Inflammatory processes
TGFB1 (Transforming Growth Factor Beta 1)	Immune system regulation
C3a	Complement system component
C4a	Complement system component
Leptin	Energy regulation & weight
ADH (Antidiuretic Hormone)	Water regulation
Osmolality	Fluid balance
ACTH (Adrenocorticotropic Hormone)	Adrenal gland function
Cortisol	Stress response

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Why Is My Provider Ordering These Tests?

HLA DR/DQ Testing *(Human Leukocyte Antigen)*
HLA is set of genes on chromosome 6. This test determines if you are genetically susceptible to develop CIRS when exposed to specific biotoxins.

Vasoactive Intestinal Peptide *(VIP, 23-63 pg/mL)*
VIP is a neuroregulatory peptide with anti-inflammatory, vasodilatory, and bronchodilatory effects. In CIRS, VIP levels can be disrupted, contributing to airway hyperreactivity, pulmonary hypertension, and abnormal blood flow. Treatment with VIP has been shown to improve symptoms and normalize other biomarkers in CIRS.

Melanocyte Stimulating Hormone *(MSH, 35-81 pg/mL)*
MSH is also a neuroregulatory hormone with powerful anti-inflammatory properties. MSH regulates several functions in the body, including inflammation, hormone production, and protection of mucous membranes. Low levels of MSH are common in CIRS and are associated with increased susceptibility to chronic pain, fatigue, sleep disturbances, temperature instability, muscle pain, gluten intolerance, ADH/osmolality imbalance, leptin resistant weight gain, and cognitive issues.

Vascular Endothelial Growth Factor *(VEGF, 31-86 pg/mL)*
VEGF is involved in the formation of new blood vessels *(angiogenesis)*. In CIRS, dysregulation of VEGF can lead to inadequate blood flow and oxygen delivery to tissues, contributing to symptoms like fatigue and cognitive dysfunction. Normalizing VEGF levels is essential for restoring proper blood flow and tissue oxygenation. Low VEGF may be an indicator of capillary hypoperfusion leading to fatigue, brain fog, and exercise intolerance. CIRS patients can also have extremely high levels of VEGF indicating upregulation of the innate immune system as the body compensates for poor oxygen delivery.

Matrix Metalloproteinase-9 *(MMP-9, <332 ng/mL)*
MMP-9 is an enzyme that breaks down extracellular matrix components, playing a role in inflammation and tissue remodeling. High levels of MMP-9 can lead to increased vascular permeability, including the blood brain barrier. Patients with high MMP9 may have more cognitive symptoms, brain fog, and sensitivity to treatment with binders.

Complement Components C3a and C4a *(C3a 55-486 ng/mL; C4a <2830 ng/mL)*
C3a and C4a are part of the complement system, which helps clear pathogens and damaged cells. Elevated levels of C3a and C4a in CIRS suggest an ongoing inflammatory response to biotoxins. Monitoring and managing these levels can help assess the inflammatory status of the patient and the effectiveness of treatment. In CIRS patients, high levels of C4a is more suggestive of mold/endotoxin related illness and high levels of C3a more suggestive of Lyme/tick borne infection related illness.

Leptin *(males: 0.5-13.8ng/mL; females: 1.1-27.5 ng/mL)*
Leptin is both a hormone and cytokine produced by adipocytes *(fat cells)*. The elevated levels of CIRS related cytokines block hypothalamic receptors creating leptin resistance. Leptin resistance decreases the body's ability to use fat stores as energy which can lead to dramatic weight gain/inability to lose weight despite caloric restriction/regular physical exercise.

Antidiuretic Hormone (ADH) *(1-13.3 pg/mL)*
ADH regulates water retention in the body, affecting hydration and electrolyte balance. CIRS can disrupt ADH function, leading to frequent urination, excessive thirst, and issues with sodium and water balance. Optimal ADH levels are closely tied to osmolality *(the concentration of solutes in the blood)*, and both should be in balance to maintain proper hydration and electrolyte homeostasis.

Osmolality *(280-300mOsm/L)*
Patients with CIRS often demonstrate abnormal patterns of ADH/vasopressin and osmolality which underlie the common symptoms seen in POTS (postural orthostatic tachycardia syndrome) or dysautonomia. Relative ADH deficiency is most commonly seen in the setting of mid/high normal osmolality. ADH causes kidneys to retain water, therefore when levels are low, patients will report frequent urination, excessive thirst, and orthostatic lightheadedness.

Adrenocorticotropic Hormone *(ACTH)* & Cortisol *(ACTH: 8-77pg/mL; AM Cortisol 4.3-22.4mcg/dL)*
ACTH stimulates the adrenal glands to release cortisol, a stress hormone that plays a vital role in the body's response to stress, metabolism, and immune response regulation. In CIRS, the ACTH and cortisol levels are important for assessing the functionality of the hypothalamic-pituitary-adrenal (HPA) axis. Dysregulation in this axis can contribute to fatigue, poor stress tolerance, and other CIRS symptoms. Optimal ranges for these hormones are typically within standard laboratory reference values, but specific lev