Lyme Disease/MSIDS: Multiple Systemic Infectious Disease Syndrome: Differential Diagnostic Map

1) Infections:

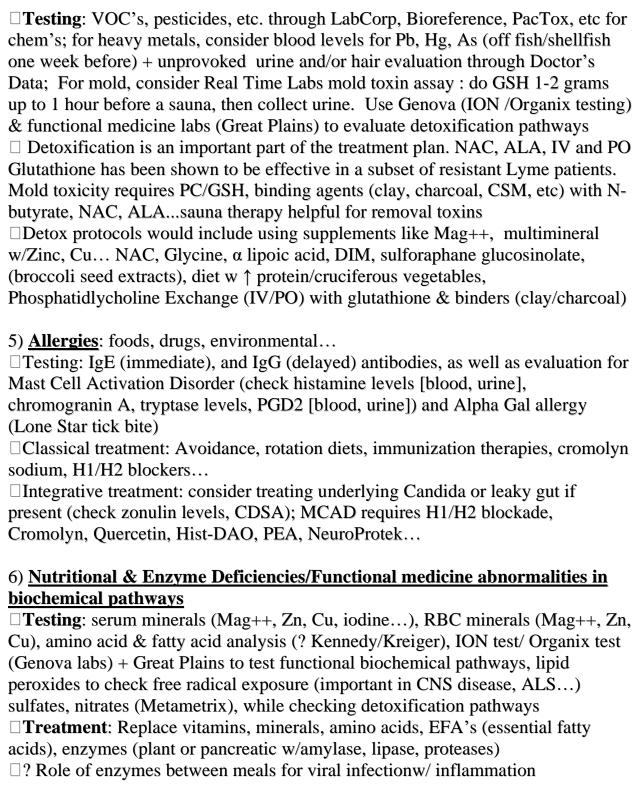
- a) **Bacterial**: Lyme disease (B. sensu stricto) and other borrelia sensu lato species (B. afzelii, B. garinii, B. mayonii...), Relapsing fever borrelia (soft ticks: B. hermsii, B. parkerii...hard ticks: Borrelia miyamotoi), Ehrlichiosis (multiple spp)/Anaplasmosis, Bartonella (multiple species), Mycoplasma (multiple species, esp. M. fermentans), Chlamydia, RMSF, Typhus, Q-Fever (Coxiella burnetii), Brucella, Tularemia; Tick paralysis secondary to neurotoxins secreted by Dermatocenter andersoni & variabilis), rarely Ixodes ticks
- b) **Parasites: Babesiosis and other piroplasms** (especially *B. microti* and *WA-1/duncani*), FL-1953 (*protomyxoa rheumatica*), toxoplasmosis, filiariasis, GI: amebiasis, giardiasis, strongyloides, hookworm, pinworm, ? roundworm
 - c) Viruses: EBV, HHV-6, HHV-8, CMV, W Nile, EEE, Powassan encephalitis and other viral encephalopathies, Heartland and Bourbon viruses, SFTS (Severe Fever & Thrombocytopenia Syndrome), South Bay v., BLTPV-1
 - d) Candida and other fungi

2) **Immune dysfunction**

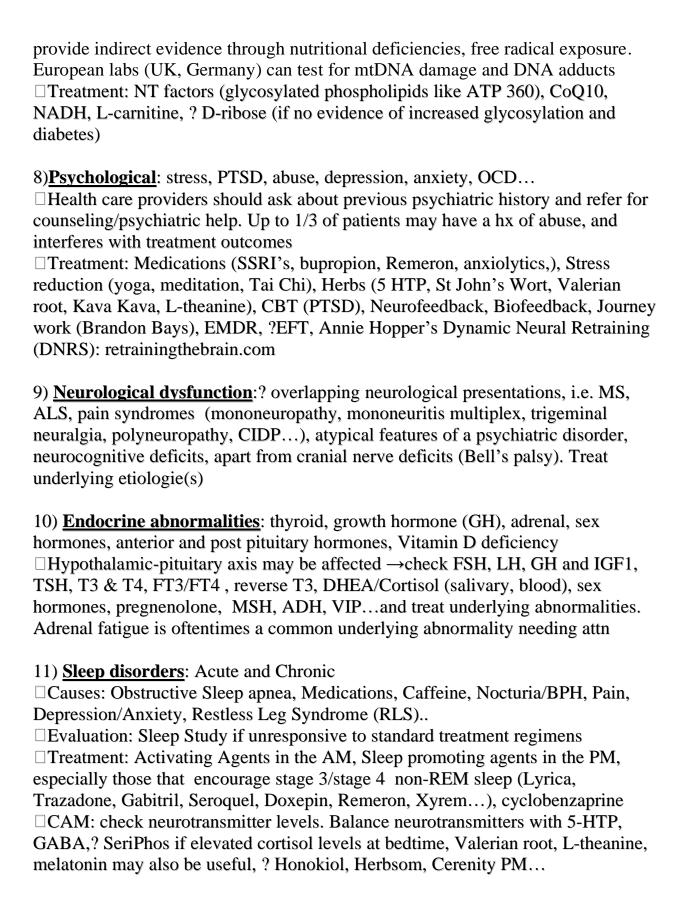
□Positive ANA, RF and other autoimmune markers, ↑ severity with genetic HLA markers (HLA DR2, 4), elevated pro-inflammatory cells, low immunoglobulin and subclasses(seen w/chronic inf's w/borrelia). Consider Plaquenil, SQIG/ IVIG

3) **Inflammation**

- □Classical: increase in inflammatory cytokines: (IL-1, IL-6, TNF-alpha, interferon gamma, IL-17), chemokines, bradykinins, leukotrienes, etc. Consider use of immune modulators (such as Plaquenil), drugs w/anti-inflammatory effect (macrolides, tetracyclines), IVIG for decreased immunoglobulins & small fiber neuropathy
- □Integrative Therapies: block NFKappa B (NAC, GSH [oral, IV], ALA) and focus on down-regulation of the inflammatory NO cycle: use diet/supplements that are Nrf2 activators (antioxidants like curcurmin, broccoli seed extract [sulforaphane], resveratrol, green tea extract), CoQ10, B vitamins, Mag++, Zn++, omega 3 FA's, and consider decreasing activation of the NLRP3 inflammasome w/melatonin
- 4) <u>Toxicity</u>: Multiple Chemical Sensitivity, Environmental Illness, Heavy Metals, Mold and Neurotoxins (external and internal biotoxins)



7) <u>Mitochondrial dysfunction:</u> Testing: lipid peroxides, 8-OH dG, protein carbonyls to test for oxidative stress. Organix test (Genova/Metametrix) may



12) Autonomic Nervous System (ANS) Dysfunction/POTS (Postural
Orthostatic Tachycardia Syndrome)
☐ Certain Chronic Lyme disease patients will complain of fatigue, dizziness
w/standing, & concentration problems despite classical therapies. BP will be low
on exam (< 90-100/60), with associated increases in heart rate (tachycardia, > 100
BPM) at rest.
☐ Testing: Tilt table test, blood pressure log with home readings, sitting and
standing BP and pulse at time zero, 3, 6 and 9-10 minutes in the doctor's office
□ Treatment: salt (minimum 3-4 grams/day,? salt tab's), increase fluids (3 liters +),
consider Florinef, Midodrine, Northera, Cortef (if low adrenals), and/or B blockers,
occasionally clonidine and SSRI's like sertraline(Zoloft) if inadequate response
13) <u>Gastrointestinal</u> : Leaky Gut, food allergies, SIBO, Candida, dysbiosis,
parasites, celiac disease/gluten sensitivity, colitis, cancer
☐ Celiac disease: one of several malabsorption syndromes, due to gluten
sensitivity. Look for laboratory evidence of malabsorption: ↓ albumin as well as
lowered cholesterol, Ca++, Mag++, B12, w/ macrocytic anemia, ↓ Fe, K+
☐ Testing: Antigliadin AB, TTG, ? Cyrex panel, avoid gluten as therapeutic trial.
Individuals may be gluten sensitive without having true celiac disease
□Other GI: Crohns, Ulcerative Colitis (UC), parasites, Candida/Leaky
gut/dysbiosis, other malabsorption syndromes
14) Elevated Liver Function Tests (LFT's): ? antibiotics, ETOH, Hepatitis,
Hemochromatosis (iron overload), Wilsons disease (copper overload), α-1AT
deficiency, chemicals (carbontetrachloride, drugs)
□Testing: ANA, AMA, Hepatitis A, B, C screen, Fe-TIBC/ferritin, ceruloplasmin
levels, α-antitrypsin levels, tick-borne panel, lipid levels (high TG)
Treatment: Treat symptomatically if above etiologies ruled out. CAM: Milk

- 15) <u>Pain/Addiction:</u> Consider LDN, Nrf2 activators (curcumin, sulforaphane, resveratrol, green tea extract), liposomal Glutathione capsules 6-8 qd/? Q 3days, NAC, ALA, drainage remedies [Pekana (Itires)] for lymphatic drainage, BLT/Greenwood Herbals Herx formula, IVIG?
- 16) **Deconditioning**: Need for physical therapy (PT)/exercise programs.

thistle (silymarin), Hepa #2 (TCM), NAC, alpha lipoic acid, glutathione..

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