“Foundations of Functional Blood Chemistry Analysis” – Session 11
Dr. Dicken Weatherby

Functional Blood Chemistry & CBC Analysis

Session 11
Immune Markers

Immune Dysfunctions

Immune Deficiency, Allergies, Immune Over-Activity

Causes of Immune Dysregulation

• External Influences
  – Pharmaceutical drugs
  – Toxins
  – Nutrient deficiencies
  – Functional disturbances of the GI tract
  – Systemic infections
  – Poor genetics
  – Hormonal imbalance
  – Stress
  – Poor detoxification and excretion

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Causes of Immune Dysregulation

- Internal Reserve Capacity
  - Good genetics
  - Optimal digestion, absorption and excretion
  - Optimal nutritional status
  - Optimal liver function
  - Optimal neuro-endocrine regulation
  - Structural integrity
  - Free from stress, anxiety and worry
### Invading Pathogens
- Epstein-Barr Virus (EBV)
- Cytomegalovirus (CMV)
- Herpes simplex I and II
- Human Herpes virus-VI
- Candida albicans
- Other viruses
- Parasites
- Bacteria

### Underlying Causative Factors
- Lifestyle factors
- GI Dysfunction
- Liver Toxicity
- Environmental exposure
- Dental infections
- Emotional and Social Factors

### Underlying Causative Factors: Lifestyle Factors
- Stress
- Diet
  - Trans fats
  - Sugar
  - Nutrient deficiencies
- Smoking
- Sleep deprivation
Underlying Causative Factors:

GI Dysfunctions

• Abnormal Mucosal Barrier Function
  – Intestinal Hyperpermeability
  – Secretory IgA dysfunction
• Dysbiosis

Underlying Causative Factors: Others

• Liver Toxicity
• Environmental and other influences
• Dental infections
• Emotional and Social Factors

Immune Dysfunctions

• Immune Deficiency
  – Chronic Bacterial and Viral Infections, e.g. CFIDS
• Allergies
• Immune Disorders
  – Allergic Rhinitis
  – Asthma
  – Eczema
Immune Deficiency: CFIDS/CFS

- Symptoms
- “Causes”
- Associated Viruses
  - EBV
  - CMV
  - HSV I & II
  - HHV - VI

Allergies, Sensitivities, Intolerances

“Is it that my patient is allergic to particular substances or has the internal environment of my patient’s body gotten to a state where it is now reacting to these substances”?

Common Immune Dysfunctions

- Allergic Rhinitis
- Asthma
- Eczema
Common Immune Disorders: Functional Diagnostic Medicine Approach

- Gastrointestinal dysfunction
- Abnormal intestinal mucosal barrier function
- Food allergies
- Nutrient deficiencies
- Adrenal dysfunction
- Liver toxicity
- Environmental toxicity
- Stress
- Sleep problems

Functional Diagnosis of Immune System and Allergies

The Big Ideas to Improve Immune Function

- Identify and remove the stressors that impact the immune system
- Strengthen the weaknesses
- Optimize GI function
- Optimize digestion and absorption of all nutrients
- Optimize blood sugar regulation
- Optimize neuroendocrine function
Primary FDM Testing

Signs and Symptoms Analysis

Signs and Symptoms

**Symptoms**
- Runny or drippy nose
- Catch colds at the beginning of winter
- Mucus producing cough
- Frequent infections
- Never get sick
- Acne (adult)
- Itchy skin / dermatitis
- Cysts, boils, rashes
- History of chronic viral conditions

**Signs**
- Eczema
- Itchy ears
- White matter on tympanic membrane
- Follicular hyperkeratosis
- Slow wound healing
- Hang nails and cuticle inflammation
- White spots on finger nails
- Conjunctivitis

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Immune Insufficiency
- Decreased albumin levels (<4.0 or 40g/L)
- A decreased total globulin (< 2.0 or 20 g/L)
- A decreased total white blood cell count (<5.5)

Immune Activation
- An increased level of total globulins (>2.8 or 28 g/L)
- Decreased albumin/globulin ratio (<1.5)

Thymus Abnormality
- Elevated bilirubin (>1.2 or >20.5 μmol/dL)
- Increased HGB (>145 g/L in women or 150 g/L in men)
- Increased HCT (>44 or 0.44 in women and >48 or 0.48 in men)
- Increased RBCs (>4.5 in women and >4.9 in men)

Zinc Deficiency/Insufficiency
- Decreased levels of Alkaline Phosphatase (<70) have been associated with zinc deficiency.
- Decreased WBC levels (<5.5)
- You may also see decreased WBC and/or RBC zinc levels
- Follow-up a decreased alkaline phosphatase with a zinc taste test.
### Blood Test Patterns for Infections

#### Acute Bacterial Infection
- Neutrophils will tend to be increased (>65).
- Decreased or normal lymphocyte count (<24)
- Total WBC count may be elevated (>7.5)
- An increased neutrophils count (>60) and normal lymphocytes = an acute bacterial picture.

#### Chronic Bacterial Infection
- An increased neutrophil count (>60)
- Decreased WBC (<5.5)
- Lymphocytes may be decreased (<24)
- Increased monocytes (>7) in the recovery phase.

#### Acute Viral Infection
- Lymphocytes will be increased (>44)
- Increased total WBC (>7.5) count
- Possible increased ESR (>5 men, >10 women)
- Possible increased LDH (>200)
- Decreased or normal neutrophils (<40)
Blood Test Patterns for Infections

**Chronic Viral Infection**
- Increased lymphocytes (>44)
- Decreased total WBC count (<5.5)
- Expect to see decreased neutrophils (<40)
- May see a decreased lymphocyte count (<20) in very chronic infections

**Recovery Phase of Infection**
- Monocytes will often be elevated (>7)

Primary FDM Assessment

**Allergies, Sensitivities and Intolerances**

Miscellaneous Symptoms of Food Allergies

- Arrhythmia
- Edema
- Fainting
- Fatigue
- Headache
- Hypoglycemia
- Itchy nose or throat
- Migraines
- Sinusitis
- Dizziness
- Canker sores
- Constipation
- Hemorrhoids
- Hypertension
- Gallbladder pain
- Colitis
- Weight gain

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Symptoms Associated with Food Allergies

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>SYMPTOMS and DISEASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GI</td>
<td>Canker sores, celiac disease, chronic diarrhea, duodenal ulcer, gastritis, IBS, malabsorption, UC.</td>
</tr>
<tr>
<td>Genitourinary</td>
<td>Bed-wetting, chronic bladder infection, nephrosia</td>
</tr>
<tr>
<td>Immune</td>
<td>Chronic infections, frequent ear infections</td>
</tr>
<tr>
<td>Mental/Emotional</td>
<td>Anxiety, depression, hyperactivity, inability to concentrate, incoherence, irritability, mental confusion, personality changes, seizures</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>Bursitis, joint pain, low back pain</td>
</tr>
<tr>
<td>Respiratory</td>
<td>Asthma, chronic bronchitis, wheezing</td>
</tr>
<tr>
<td>Skin</td>
<td>Acne, eczema, hives, itching, skin rash</td>
</tr>
</tbody>
</table>

Nutritional Exam Findings

- Adult acne and Acne rosacea
- Scars on tympanic membrane
- Generalized itching
- Discoloration of nails
- Dark circles under eyes
- Conjunctivitis
- Recurrent styes
- Sores inside the nose
- Salute sign
- Intranasal polyps
- Red rash over nose and under eyes
- Geographic tongue
- Scalloped tongue

Primary FDM Testing

Findings on Blood Chemistry Analysis

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Allergies

<table>
<thead>
<tr>
<th>Cell Type</th>
<th>Lab Range</th>
<th>Optimal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eosinophils</td>
<td>0 – 7%</td>
<td>&lt;3%</td>
</tr>
<tr>
<td>Basophils</td>
<td>0 – 2%</td>
<td>0 – 1%</td>
</tr>
</tbody>
</table>

Summary