Functional Medicine University’s
Functional Diagnostic Medicine Training Program

Module 2

Gastrointestinal Assessment & Evaluation

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   JAOA: Presence of Chapman Reflex Points in Hospitalized Patients with Pneumonia
Signs and Symptoms of GI Dysfunction

- Hypochlorhydria and/or Pancreatic-Insufficiency
  - Bloating shortly after a meal
  - Poor appetite (loss of taste for meat)
  - Supplements cause upset stomach
  - Food allergies
  - Burping/belching
  - Anemia (Iron/B12) unresponsive to supplementation
    - Diseases Associated with Hypochlorhydria
      - Psoriasis
      - Acne Rosacea
      - Urticaria
      - Thyroid dysfunction
      - Eczema
      - Osteoporosis
      - Autoimmune disease

- Gastric Irritation (gastritis, ulcer, H.pylori)
  - Heartburn
  - Acid reflux
  - Sour taste in mouth
  - Stomach pain/cramps
  - Increased stomach pain with HCI and/or digestive enzyme supplementation

- Pancreatic/Small Intestine Dysfunction
  - Belching 1 hours after a meal
  - Undigested food in stool
  - Food allergies
  - Gluten sensitivity

- Liver/Gallbladder
  - Greasy foods upset stomach
  - Sour taste in mouth
  - Nausea
  - Dry skin
  - Chemical sensitivity (smoke perfume/diesel fumes
  - Pain in the right upper quadrant of the abdomen
  - Light colored stools
Signs and Symptoms of GI Dysfunction (con’t)

- Bowel Dysbiosis/Intestinal Hyperpermeability
  - Sinus congestion
  - Alternating constipation
  - Mood swings, mental confusion (yeast?)
  - Coating on tongue (also noted in liver dysfunction)
  - Foul smelling stool
  - Bad breath
  - Anal itching
  - Bloody stools, mucus in stools
  - Strong body odor
  - Dark circles under the eyes

- Diseases Associated with Intestinal Hyperpermeability
  - Acne
  - Autism
  - Celiac disease
  - CFIDS
  - Childhood hyperactivity
  - Eczema
  - IBS/IBD
  - Pancreatic insufficiency
  - Psoriasis
  - Urticaria

- Stool Characteristics
  - Pale (yellow or white)
    - Malabsorption
    - Celiac
    - Bile acid synthesis defect
    - Cholestasis (biliary disorders)
    - Hepatitis (liver disorders)
    - Jaundice
    - Steatorrhea
    - Pancreatic dysfunction
  - Green
    - Antibiotic use
    - Gastroenteritis
      - Salmonella
      - Giardia
Signs and Symptoms of GI Dysfunction

- Stool Characteristics
  - Dark/Black
    - Internal bleeding
    - Intestinal polyp
    - Cancer
    - Iron supplementation
    - Licorice
    - Beets
    - Ulcers
  - Bloody (rectal/GI Bleeding)
    - IBD
    - Gastroenteritis
    - Polyps
    - Hemorrhoids
    - Anal fissure
    - Cancer
  - Mucus (inflammation of intestines)
    - Colitis
    - Pancreatitis
    - Bowel dysbiosis
    - Food allergies
    - IBS/IBD
    - Celiac disease
    - Parasites
  - Foul Smelling
    - [sticky, increased fat (steatorrhea, floats)]
    - Pancreatic insufficiency
    - Dysbiosis
    - Pancreatitis
    - Bile duct obstruction

(Note: Steatorrhea can be caused by infections, medications, IBD, and celiac disease)
Physical Signs of Nutritional Deficiencies of the GI System

<table>
<thead>
<tr>
<th>Condition</th>
<th>Deficiencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glossitis</td>
<td>B2, B3, B6, B12, Folic Acid, zinc, iron, biotin</td>
</tr>
<tr>
<td>Angular Stomatitis Cheilosis</td>
<td>B2, B3, biotin, B6, iron</td>
</tr>
<tr>
<td>Esophagitis</td>
<td>Niacin</td>
</tr>
<tr>
<td>Proctitis</td>
<td></td>
</tr>
<tr>
<td>Hepatomegaly</td>
<td>Protein, fat</td>
</tr>
<tr>
<td>Ascites</td>
<td>Protein</td>
</tr>
</tbody>
</table>

Abdominal Examination: Standard and Functional

Please refer to Module 1: Lesson 6: Part 6 for a review of the standard abdominal examination.
The Functional Physical Exam

In the 1930’s, Dr. Frank Chapman, an osteopathic physician identified neurolymphatic reflex points that corresponded to specific organs and glands. He observed discrete tissue texture changes at specific anatomic locations for specific organ/gland pathology. Most resources indicate the possibility of an autonomic nervous system connection. The tissue changes have been described as small, smooth and firm, usually about 2-3 mm in diameter when found alone, while the pattern may be irregular if the points are found in groups. Tissue biopsy studies have been unable to demonstrate the reflex change, however, a research article published in the Journal of the American Osteopathic Association in October, 2003 concluded that there was a statistically significant relationship between the presence of Chapman reflex points classified for lung and the potential diagnosis of pneumonia. (A copy of this article is included in this Insider’s Guide for your review)

These points, known as Chapman’s Reflexes, can be used as diagnostic indicators of the potential for organ/gland dysfunction. The points have also been used for treatment. I recommend obtaining the book “An Endocrine Interpretation of Chapman Reflexes” for a more in depth discussion.

The following illustrations represent the Somatovisceral Reflexes (Chapman’s Reflexes).
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Blood Test Interpretation of Gastrointestinal Dysfunction from a Functional Medicine Perspective

The following is a compilation of patterns and changes that suggest GI dysfunction. They are not absolute and are often empirical. If you observe these patterns, further investigation is required. Remember to integrate all lab test results with the patient history and physical examination.

**Hypochlorhydria**

<table>
<thead>
<tr>
<th>Increased</th>
<th>Decreased</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCV &gt;90.0</td>
<td>Phosphorus &lt; 3.0</td>
</tr>
<tr>
<td>MCH &gt;31.9</td>
<td>Total Protein (or normal)</td>
</tr>
<tr>
<td>Anion Gap</td>
<td>CO2</td>
</tr>
<tr>
<td>Total globulin &gt;2.8</td>
<td>Alk phos</td>
</tr>
<tr>
<td>BUN &gt;16</td>
<td></td>
</tr>
</tbody>
</table>

Note:

1. Decreased alk phos indicates zinc deficiency
2. Increased anion gap indicates a need for B1
3. Confirm Hypochlorhydria with subjective complaints (gas, bloating, etc)
4. Total globulin may decrease with an inflammatory process

[Zinc and B1 are needed for the production of HCI]

[Heidelberg pH capsule test can be used to assess for Hypochlorhydria, Hyperchlorhydria, Achlorhydria, Pyloric insufficiency]

**Pancreatitis**

<table>
<thead>
<tr>
<th>Increased</th>
<th>Decreased</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALT/AST</td>
<td>Calcium</td>
</tr>
<tr>
<td>Lipase</td>
<td></td>
</tr>
<tr>
<td>Amylase</td>
<td></td>
</tr>
<tr>
<td>MCV</td>
<td></td>
</tr>
<tr>
<td>Triglycerides</td>
<td></td>
</tr>
</tbody>
</table>

1. Serum amylase is also increased in acute cholecystitis
2. Serum lipase levels are increased in pancreatic and biliary diseases
   - Often 5 to 10 times normal values in pancreatitis

Common causes: alcoholism, gallstones, smoking, cystic fibrosis, high triglycerides, infection, hyperparathyroidism
Pancreatic Insufficiency

- Inability of the exocrine pancreas to produce enough digestive enzymes to break down food in the intestine.
- Malabsorption, malnutrition, steatorrhea
- Caused by pancreatitis, cystic fibrosis, AA
- Stool analysis may be the best test to evaluate for pancreatic insufficiency

Elastase
- Produced and secreted by the pancreas
- Hydrolyses amides an esters
- Low levels are observed in pancreatic insufficiency
  - Trysin (low levels)
  - Fecal fat (high levels)

Cirrhosis of the Liver

<table>
<thead>
<tr>
<th>Increased</th>
<th>Decreased</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALT</td>
<td>Albumin</td>
</tr>
<tr>
<td>AST</td>
<td>Cholesterol</td>
</tr>
<tr>
<td>Alk Phos</td>
<td>RBC magnesium</td>
</tr>
<tr>
<td>Amylase</td>
<td></td>
</tr>
<tr>
<td>Total bilirubin</td>
<td></td>
</tr>
<tr>
<td>LDH</td>
<td></td>
</tr>
</tbody>
</table>

Liver Dysfunction

<table>
<thead>
<tr>
<th>Increased</th>
<th>Decreased</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALT/AST</td>
<td>Cholesterol</td>
</tr>
<tr>
<td>LDH</td>
<td>Triglycerides</td>
</tr>
<tr>
<td>Bilirubin</td>
<td>Protein</td>
</tr>
<tr>
<td>Ferritin</td>
<td>BUN</td>
</tr>
</tbody>
</table>

Gilbert’s Syndrome

**Increased**

- Unconjugated (indirect) Bilirubin

- Symptoms: Usually none; possible: jaundice, fatigue, abdominal pain
- Cause: inherited gene abnormality of phase II liver detoxification pathway.
- More side effects with medications
Fatty Liver (>10% of liver weight)

- Can cause inflammation (steatohepatitis)
- Causes: obesity, diabetes, medications, viruses, toxins

*Increased*

ALT  
LDH  
Alk Phos

Biliary Insufficiency/Stasis (decreased production of bile/bile too thick)

- Possible causes: Hypochlorhydria, hormone imbalances (high estrogen levels), diet, liver dysfunction

*Increased*

GGTP  
Alk Phos  
Cholesterol

*Note*: Labs may be normal. Check subjective indications – gas, bloating, pain between the shoulder blades, pain over the eyes, light colored stools.

Biliary Obstruction

*Increased*

GGTP  
Alk Phos  
Total Bilirubin  
ALT  
AST

*Note*: If GGTP is >150 u/l and total serum bilirubin is >2.8 mg/dL refer to qualified physician.

Chronic Renal Dysfunction

*Increased*

BUN  
Alk phos  
Creatinine  
CRP  
Phosphorus  
Uric Acid  
Triglycerides
Digested Inflammation (Leaky Gut Syndrome, gastritis, IBD/IBS)

<table>
<thead>
<tr>
<th>Increased</th>
<th>Decreased</th>
</tr>
</thead>
<tbody>
<tr>
<td>Globulin</td>
<td>Albumin</td>
</tr>
<tr>
<td>ALP isoenzyme</td>
<td>Phosphorous</td>
</tr>
<tr>
<td>MCV/MCH</td>
<td>HCT</td>
</tr>
<tr>
<td></td>
<td>HGB</td>
</tr>
<tr>
<td></td>
<td>Potassium</td>
</tr>
</tbody>
</table>

Intestinal Parasites

<table>
<thead>
<tr>
<th>Increased</th>
</tr>
</thead>
<tbody>
<tr>
<td>IgE</td>
</tr>
<tr>
<td>Basophils</td>
</tr>
<tr>
<td>Monocytes</td>
</tr>
<tr>
<td>Eosinophils</td>
</tr>
</tbody>
</table>

Note: If you observe these increased levels a [comprehensive stool analysis] is recommended. This will be discussed in detail in future lessons.
References

1. Balancing Body Chemistry with Nutrition, Dr. Harry Eidenier, Jr., referenced and reprinted with permission
2. Osteopathic Medicine Recall, Andrew D. Mosier, Dai Kohara
3. Digestive Wellness, 3rd ed, Elizabeth Lipski, Ph.D., CCN