Assessing Digestive Function
Using Diagnostic Muscle Testing

by Brian C. Schroeder, D.C.

All of us in the healing arts who are practicing at some level in a healing or health care profession at one time or another have worked with patients who had fairly complex symptomatology going on. Whatever our style of practice, whatever our methodology of diagnoses and/or treatment all of us are trying to achieve one thing with our patient and that is to assist them in healing whatever the problem is that brought them to our offices in the first place. Whether or not we choose to use meridian therapy, bioenergetic balancing, structural balancing or any other form of neural, bioenergetic or physiological technique, there is one process which is necessary for any true healing mechanism to occur. That process is the ability of the body to regenerate itself at the cellular level. One of the characteristics of living organisms is that they are able to regenerate the parts of themselves, i.e. cells. These cells are able not only to regenerate but repair themselves and all true permanent healing involves cellular regeneration.

In order for cellular regeneration to be achieved several criteria have to be fulfilled. While it is true that neurological input, bioenergetic input, blood supply etc. must all be present, one of the true core level things that must be available within the cell for regeneration to take place is nutrition. The cell must have an adequate supply of vitamins, minerals, amino acids, bioflavonoids, oxygen, essential fatty acids, and glucose in order for any cellular replication or regeneration to occur. The only way these nutrients can be present in the cell is if they are present in the appropriate form in the blood stream and the only way they get into the blood stream is via a correctly functioning digestive system. Many practitioners will suggest to their patients that they take this supplement or that herb or this other glandular extract, without ever first assessing whether or not the person's digestive function is adequate to insure that these nutritional therapeutic substances are actually being delivered to the tissues. All of us who practice manual muscle testing or diagnostic muscle testing, which ever term you choose to use, have at our disposal a unique diagnostic tool which allows us to assess with a fairly high level of accuracy and reliability the digestive function of an individual that has been presented to us. This paper represents an attempt to distill a digestive assessment examination from a number of different techniques and a number of different bodies of knowledge that I have studied over the years, and incorporate all these techniques into one simple examination room protocol, which is easily learnable and accurately reproducible. In assessing the digestive function of an individual the first thing I do in this technique is to look at the abdominal reflexes. These reflexes are based on the work that has been done by Dr. Howard Loomis, a chiropractor who teaches a course in enzyme pathophysiology based on the work of Dr. Edward Howell, relating to food enzymes and digestive enzymes. Dr. Loomis' protocol consists of checking 8 abdominal reflexes which relate to different organ systems and different aspects of digestive function. These reflexes are essentially a deep tendon reflex that has been used for decades to test the integrity of the peripheral nerves. These tests involve sensory and motor pathways integrated from the muscle spindle to the motor cortex and back to muscle. The standard application of the test is usually related to the patellar ligament, whereby the ligament is struck with a reflex hammer to elicit the reflex, and the quadriceps muscle contracts in response. The application of this test determines the level of response of the reflex after the muscle spindle has been stretched and these are noted with simple visual observation. The mechanism behind the deep tendon reflex is more appropriately called the muscle stretch response (MSR). In order to fully understand how deep tendon reflexes and muscle stretch responses can be applied to diagnostic assessment of underlying visceral, i.e. digestive system organs, we need to venture into the field of embryology for just a moment and look at the early development of the nervous system.

At 16 days of fetal age, a transverse section of tissue shows the mesoderm spreading from the primitive streak as the prominent layer between the ectoderm and endoderm. This segregation of embryonic mesoderm signifies the advent of the second phase of gastrulation. At 19 days a thickened plate of ectoderm, the neural plate,

develops along the mid-dorsal line of the embryo and is transformed by invagination into a neural tube. The neural tube detaches from the underlying ectoderm and thickens to develop into the spinal cord and brain. The spinal cord develops from the caudal portion of the neural tube.

During the fourth week the embryo is ready to enter body building, and the following characteristics of all vertebrates make their appearance:

1. A tubular central nervous system.
2. An internal skeleton.
3. The limbs, arranged in two pairs, with the internal skeleton.
4. A mouth, closed by a lower jaw.
5. A pharynx, which differentiates lungs.
6. A ventral heart connecting with a closed system of blood vessels.
7. A caelom, or body cavity, divided into compartments for the heart, lungs, and abdominal organs.

During the fourth week of development all of the above parts make their beginnings. The neural plate folds into a tube which detaches from the general ectoderm and becomes the nervous system. A cord of mesodermal tissue; the notochord, runs axially between the neural tube and gut. It serves as primitive "backbone" and is later surrounded and replaced by the vertebral column. The roof of the ectodermal yolk sac folds into a tubular gut which becomes the digestive tract and respiratory system. The somites are primitive segments which lie along the spinal cord in pairs. They arise when transverse clefts subdivide the thickened mesoderm next to the midplane into block-like masses. Each somite pair gives rise to a muscle mass supplied by a spinal nerve, while each somite pair also collaborates in producing a vertebra. At the level of each pair of somites lie primitive kidney tubules, and also blood vessels arising from the aorta. This whole group of associated mesodermal structures is repeated serially throughout much of the embryo's length. Thus, man develops as a segmented organism, each segment having nerve connections with:

DIAGNOSTIC FORMULA

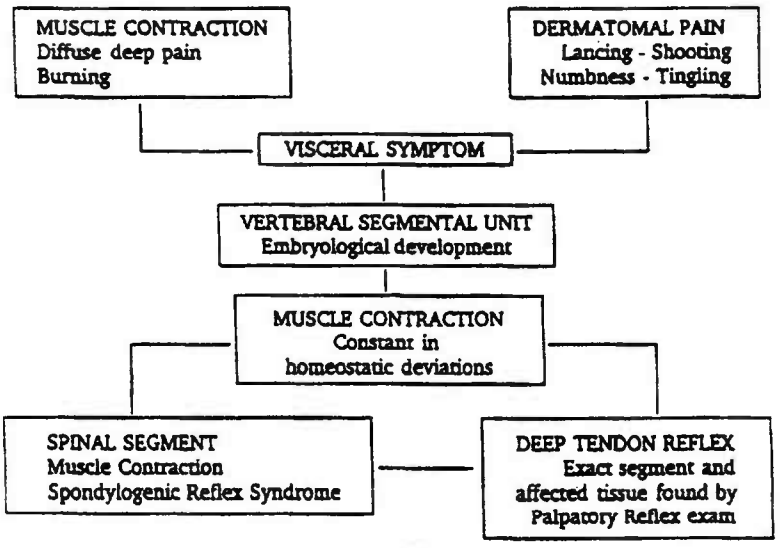

FIGURE 1

1. A specific dermatome (ectoderm)
2. A specific myotome, or group of muscles (mesoderm).
3. A specific visceromere, viscus or part of a viscus (endoderm).

Therefore, an embryologic correlation between pain, muscle contraction, and visceral symptoms exists at each spinal level. It goes without saying that all symptomatic complaints can be categorized as pain, muscle contraction or visceral symptoms (see Figure 1).

In 1898, the noted English physiologist, Head found that changes in viscera were accompanied by changes in cutaneous areas supplied by the same root segment. In 1917 Mackenzie found changes in muscle tone (in groups of muscles) associated with the root supply of the pathologically affected viscera. It comes as no surprise then, in 1990, that pain and visceral dysfunction are always accompanied by muscle contraction. In the 1940's Sherrington first postulated what would become known as Sherrington's Laws:

1. Every posterior spinal nerve root supplies a special region of the skin, although fibers

from adjacent spinal segments may invade such a region.

2. When a muscle receives a nerve impulse to contract, its antagonist receives simultaneously an impulse to relax.

It can be said that pain, visceral symptoms and muscle contraction are experienced as cells are stimulated by their environment. Changes in that environment act as stimuli to the cells. This is true whether the change is in the external environment, such as placing your hand on a hot stove, or if the change is in the internal environment such as the presence of an allergen or a change in the consistency of the extracelluar fluid. Regardless of origin, the stimulus excites a sensory response which is carried to the brain in a predictable manner, and a motor response is elicited. The first order neuron carries impulses to the spinal cord from three sources:

1. Points on the external surface of the body.
2. Muscles and joints within its segment.
3. Viscera within the same spinal segment.

Each spinal segment and its ectoderm, mesoderm, endoderm connections being embryologically determined. At the spinal cord the 1st order neuron synapses with the 2nd order neuron in the posterior horn. The 2nd order neuron is the somatic afferent final common pathway. This neuron carries impulses, from all 1st order neurons, through the spinothalamic tract to the thalamus for interpretation of crude sensation and synapses with the 3rd order neuron that conducts impulses to the post-central gyrus of the cerebral cortex. All sensory fibers synapse at the thalamus, therefore, massiveness of sensation and not localized sensation is recorded. The post-central gyrus via the 3rd order neuron is where pain is localized and the appropriate response relayed back to the spinal root segment (see Figure 2).

Now what all of this boils down to is that because of the fact that each segment associated with the somite formation and the embryonic development of the organism contains a dermatome, myotome, and visceromere, that association or relationship is carried forward into adulthood in the organism. This means there is a

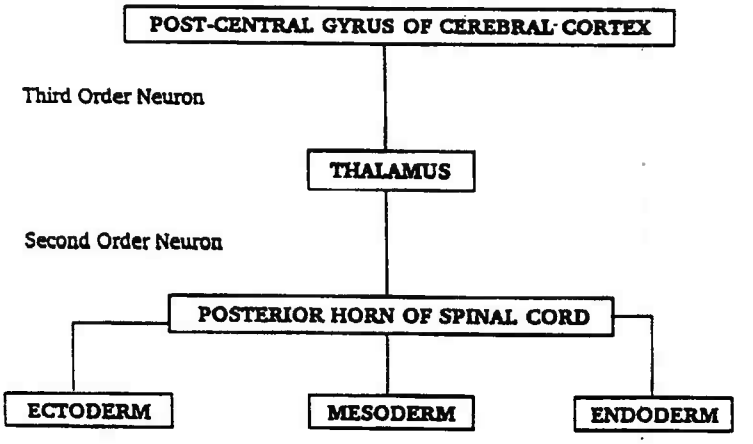

Figure 2

connection between the digestive organ and the muscle and nerve that shared a somite with it in it's embryological development. It is this relationship that allows us to stretch the rectus abdominus in the area adjacent to the pancreas and assess pancreas function, in the area adjacent to the liver/gall bladder and assess their function etc. We assess these abdominal reflexes according to the protocol designed by Loomis. There are eight sites that we check. The first is the epigastrium where we are looking for gastritis, and/or an indication of a hiatal hernia. Next are the reflexes; in the upper left quadrant, lower left quadrant, lower right quadrant and upper right quadrant. The upper left quadrant relates to the pancreas and sugar intolerance, the lower left quadrant relates to the valve of Houston and fiber intolerance, the supra pubic can relate to cystitis, chronic inflammation and pelvic congestion and stagnation. The lower right quadrant relates to the ileocecal valve and protein intolerance and the upper right quadrant relates to the liver and gallbladder and fat intolerance (see Figure 3). The other reflexes are the kidney stress reflex, this reflex is located on the back in the costal phrenic angle, or immediately inferior to where the 12th ribs connect to the spine. The last reflex is the transverse abdominis reflex and this relates to chronic constipation or candidiasis growth and/or diarrhea, and the transverse abdominis reflex is located three finger widths superior to the iliac crest and just slightly anterior to the midcoronal plane of the body. The methods of palpating each of these reflexes involves using the tips of the fingers and exerting a mild to moderate pressure directly inward and slightly cephalad (see Figure 4). The reflex response that is observed for upon

EPIGASTRIUM -
Gastritis - Ulceration
Acid rebound immediately after meals
Heartburn and bloating - Frequent use of antacids

UPPER RIGHT QUADRANT	UPPER LEFT QUADRANT
FAT INTOLERANCE Intolerance of fat and gas producing foods. Fullness and nausea 2 to 3 hours after eating. Acholic stools.	SUGAR INTOLERANCE Gas and bloating after eating raw foods. Craving for sweets Diarrhea, weight loss and malassimilation syndromes.

PERIUMBILICAL -
Colic - Maintenance
Vague, cramping "colicky" indigestion
Poorly defined bloating and fullness
Maintenance formula for adults

LOWER RIGHT QUADRANT	LOWER LEFT QUADRANT
PROTEIN INTOLERANT Loss of taste for meat Poor appetite Sense of fullness, indigestion, and nausea 1 to 2 hours after eating.	FIBER INTOLERANT Intolerance to fibrous foods Hard, dry stool Inability to lose weight Varicose veins, hemorrhoids History of diverticulitis

SUPRAPUBIC -
Cystitis - Chronic Inflammation
Hyperirritability of P.M.S.
Slow morning starter - joint stiffness
Low tolerance to exercise

FIGURE 3.

eliciting a muscle stretch response at each of these reflex points is to observe the A.S.I.S.'s of the patient and see whether or not there is any movement of one A.S.I.S. relative to the other. Any movement of one A.S.I.S. relative to the other is considered to be a positive response to the abdominal palpatory reflex test. An assessment of the components of the digestive system described here utilizing these palpatory abdominal reflexes allows us to determine the patients ability to properly assimilate simple and complex carbohydrates, protein and fat. If one has the ability to do 24 hour urinanalysis, this is an excellent laboratory test which can confirm and quantify these findings. The simple interpretation of the palpatory abdominal reflexes described herein is sufficient for our purposes to determine whether or not the patient is able to properly assimilate these broad categories of nutrients.

The next area to be assessed is the various valves of the digestive system. There are five valves with which we concern ourselves in this assessment:

1. The cardiac sphincter of the stomach and its relationship to the presence or absence of hiatal hernia.
2. The pyloric valve of the stomach.
3. The duodenal-jejenal junction valve.
4. The ileocecal valve.
5. The valve of Houston.

The assessment and treatment of all these valves is very extensively covered in the text "Visceral Manipulation" by Jon Pierre Barral and Pierre Mercier. In this text the authors describe several different methods of assessing valve function utilizing osteopathic techniques. Having utilized these techniques as well as cross checking them with therapy localization using applied kinesiology style manual muscle testing, I find I much prefer simply utilizing therapy localization and manual muscle testing. If applied by a skilled practitioner it would appear to be every bit as accurate as the osteopathic techniques utilized by the

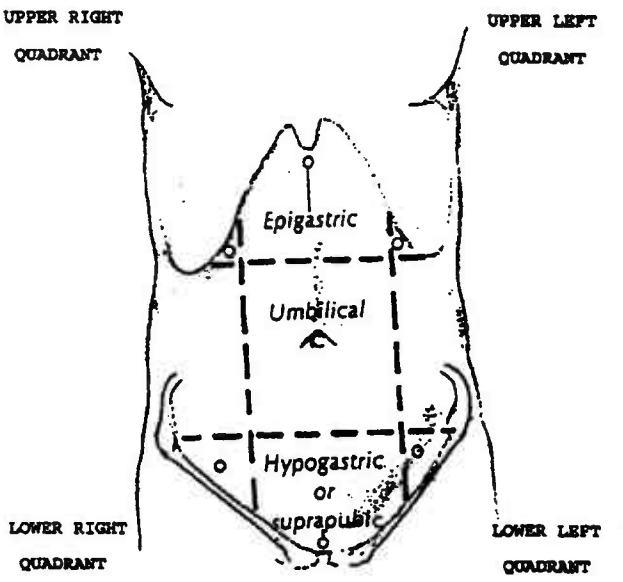

FIGURE 4.

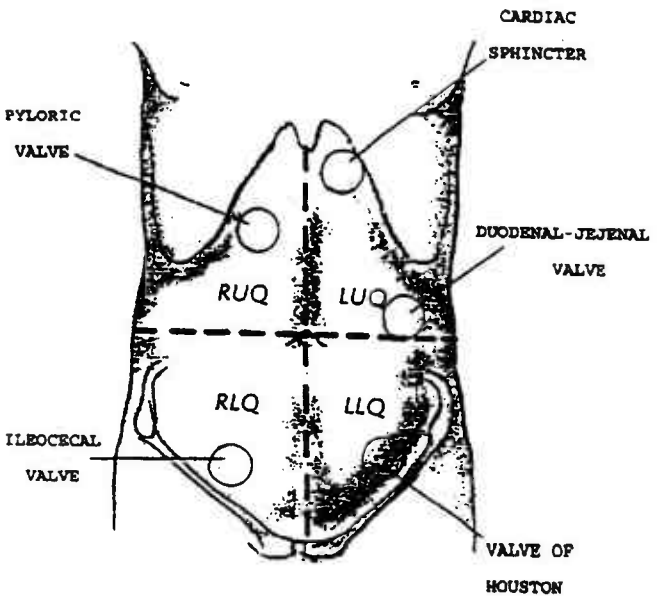

FIGURE 5

authors of the text. The anatomical sites relating to the locations of these valves are indicated in the drawing (Figure 5). Having located a valvular dysfunction, there are a number of different therapeutic options available for restoration of normal function of the valve including visceral manipulation, osteopathic or chiropractic manipulation, acupuncture and others. It is beyond the scope of this paper to go into all possible therapeutic regimes and their applicable protocols.

We will deal strictly with the diagnostic aspect, i.e. location of a malfunctioning valve utilizing therapy localization and manual muscle testing. The technique is extremely simple, utilizing therapy localization, the doctor therapy localizes the area of the valve using either dorsal or palmar surface of the hand. If he elicites a CIMS (change in muscle strength) at the site, the doctor then has the patient therapy localize the site using either an open or closed hand contact. If there is a positive response with the open hand contact that means the valve is stuck in an open position, if there is a positive response with the hand in a closed contact then that means that the valve is stuck in a closed position. The next technique involved is simply doing a diagnostic muscle screen on the various different muscles which have association to visceral organs. These are pectoralis major clavicular for the stomach, latissimus dorsi for the pancreas, quadriceps and abdominals for the small intestine, anterior deltoid for the gall bladder, pectoralis major sternal for the liver and fascia latia for the large intestine. Once again we will mention that the utilization of these muscles for testing simply establishes whether or not there may be a problem with the function of that particular organ if the muscle associated with it tests weak on screening. The last technique we can use for assessment of digestive function once again is therapy localization of each of the organs mentioned and testing of an intact indicator muscle. If there is a CIMS on any of these tests once again we are given the information that there is some sort of a problem in the organ in question. We can then proceed to do further involved tests, i.e. hair analysis and/or other lab tests or other forms of bioenergetic evaluation, e.g. tongue or pulse diagnosis, reflex points assessment etc. In order to determine what our most appropriate therapeutic protocol should be, sequential therapy localization of the digestive system organs can allow us to investigate the causal chain to determine which is the first link of the chain. If we identify more than one organ as having a potential problem through therapy localization assessment, we can then have the patient sequentially therapy localize the organs in question in pairs and determine which organ has priority in terms of determining the causal chain. This diagnostic regimen as described is what I use as a basic in office screening for digestive system dysfunction when assessing a new patient. If digestive system dysfunction is identified further diagnostic tests are ordered and the patient is placed on some sort of therapeutic regime to normalize digestive function prior to the utilization of another therapeutic nutrient protocol for whatever the presenting complaint may be. Hopefully some or all of this digestive assessment protocol will prove to be of benefit to other healing arts practitioners who utilize diagnostic muscle testing in their practices.

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