

In the Name of God

## **Avicenna's Explanation of IBS; Definition and Management**

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Avicenna's approach to disorders is unique because of his way of explaining and classifying disease processes. To have a better understanding of Avicenna's explanation of IBS, the first chapter of the first volume of Canon is presented.

### **General consideration about vitality**

Avicenna believes each vital strengths stems from a response toward the environment and results in an action. We have three vital strengths:

- 1- **The power of Self (mind)** which resides in the brain.
- 2- **The power of Instinct** or natural vitality which resides in the liver (the place where hormones are metabolized).
- 3- **The power of Vegetative Actions** which resides in the heart.

So he believes the vitality (strength or stamina) means the health and proper functioning of the CNS, liver and ANS.

### **The power of "self"**

Avicenna believes self is the center of perception and motion. Understanding can be factual or virtual.

**Factual Understanding:** It is the ordinary 5 senses (or as some believe 8 senses if we consider the sense of touch to have 4 subgroups).

**Virtual Understanding:** It's the result of vegetative actions. There are five kinds of virtual understanding: Feeling and perception, imagination, thinking, and memory/speech.

Feeling and perception: The input from sensory organs are gathered and processed by this ability. The center of receiving and processing of sensory inputs is in the forebrain.

Imagination: This is the ability to recall the processed inputs when the stimuli are gone.

Thinking: If the ability of making images is mixed with speech, it is called thinking. In thinking, images are built and reconstructed. So there may be images that has never been experienced but seem real. Like having the image of flying, or the image of a golden mountain. We conclude that thinking is not imagination and it is not hallucination either. Because hallucination is perception of something without a real stimulus (like imagination) and lacks order and structure (like thinking). The center of imagination and thinking is in the midbrain.

Memory: It is the storage of senses and not images. It is located in the hindbrain. An imbalanced humor can cause weakness of imagination and memory.

Speech: Some question if speech is a separate entity.

### **The power of instinct:**

The instinct dictates the orders to two systems: the processors and the processing (worker) systems. The youth instinct orders the body to use nutrients in building tissues, bones and muscles to help growth and development. But the senile instinct can not use the nutrients for building. It can only turn food into fat and causes a growth. Growth without development is a source of debilitation of the old ages.

Instinct vitality can be divided as follows:

- processors :
  - Nurturing actions:
    - Supplying food:
      - Blood: lack of blood to an organ causes “atrophy”
      - Connection: excessive functioning of connection causes “hypertrophic scars”
      - Mitosis: vitiligo is caused by faulty mitosis in which the tissue is built but doesn’t assume the color and shape of the mother cell. All organs have the ability to change food to their own specific markers or nutrients. Except for the liver. The liver produces substances that can be used by the whole body organs.
    - Supplying growth and development:
      - Stem cells:
        - Producing reproductive cells: sperm and ovum
        - Producing other cells (committed cells): they can produce groups of cells that later are canalized and shape into such tubes as ”vessels” or group of cells that can penetrate all other tissues.
  - Processing(Workers):
    - Absorptive actions: By villi and pores that can absorb substances.
    - Receptive actions: the action of end organs receiving the food.
    - Digestive actions: it serves two functions: the processing of food to be usable for the body and if the food can not be digested, the digestive system helps facilitate the excretion of the unwanted.
    - Excretion action: this causes the unwanted to be poured out of the body as is done by urination. If there is no way out, the excretion of unwanted material goes to a smaller organ or an organ that has more loose tissue.

A normal excretory system never blocks the way of or reacts adversely to the excretion.

The clinical significance of this classification is that the loose connective tissue (like the skin and serous membranes can be places of accumulation of toxins (unwanted or unusable materials) and will, thus, reflect the imbalance in excretory system.

### **The power of Vegetative Vitality**

The vegetative vitality, as presented by Avicenna, is the spirit or soul of an organ which directs its functions. Fear and rage are related to this state. When different humors are mixed a new organ is made. The evaporated humor causes a gaseous substance which is called spirit or ghost. If the soul leaves an organ it loses its function even though it doesn't have any function. This is the difference between a dead tissues and a paralyzed tissue. The dead tissue lacks the spirit or soul so it is putrefied and decayed. But a paralyzed tissue (because of blockage in blood or nerve supply) will not go through putrefaction. So soul or spirit is some thing that causes an organ to decide on functioning. It helps the organ to feel and sense. The soul is made after the sperm and ovum are mixed.

[Avicenna believes that soul is a by- product of matter (body)].

Contrary to Aristotle who believes any organ has its complete form of soul from the beginning, Avicenna assumes soul doesn't reach to its integrity unless it is mature enough to have connections with the brain.

The soul or spirit doesn't have the ability of voluntary actions. It has a certain predetermined directions to follow. If the vitality has the ability of deciding and volition it is the mind or self vitality and if it lacks volition, it is vegetative vitality.

The discussion belongs to philosophy to decide if emotions like fear or rage belong to the mind (with volition) or soul (without volition).

### **The Pathophysiology of IBS:**

According to Avicenna there are four qualities brought about by processing organs:

**Hotness:** This quality is helpful to the absorptive, receptive, digestive and excretory actions because it causes a better circulation and flow of substances. For absorption and excretion, it is obvious that we need a flow of liquid and this is facilitated by warmth. In digestive action, the break down of complex substances to more simple forms is also facilitated by warmth. The receptive action of any organ is by way of moving the cilia. And, again, this movement is facilitated by the temperature of the organ.

**Coldness:** That's the quality of lack of hotness. So the four actions mentioned above can not work properly when they are cold. The only actions that take advantage from a cold status of any organ are:

1- Receptive action in an infectious or toxicated status when the physician deliberately puts the organ in a cold state of action. This causes the cilia to be paralyzed and thus stops the dissemination of toxins through the body. It should be emphasized that coldness is contrary to normal functioning of any organ and it means lack of blood supply or functioning. Only artificial coldness that we prescribe in a disease state is considered desirable

2-Excretory action may also benefit from a cold state because coldness causes gas, and gas formation facilitates the excretion. In a cold state, the organ can concentrate materials without the threat of dissemination, and the peristalsis quality of any organ can be more forceful and expulsive.

**Dryness:** The receptive, excretory and absorptive actions work better in dryness. That is a state of normal scanty secretions.

**Wetness:** Wetness causes flaccidity and rustiness. Only the digestive system can work better in wetness.

The tissue wetness is called edema and the wetness of the hollow organs like bowels is called mucus. (Canon- Volume 1)

According to Avicenna diarrhea is classified in different groups:

- 1- Diarrhea of liver diseases
- 2-Diarrhea of spleen diseases
- 3- Diarrhea of bowels disease
- 4- Food- induced diarrhea
- 5- Diarrhea of brain diseases
- 6-Diarrhea of intestinal obstruction
- 7-Diarrhea because of fever and high body temperature
- 8- Diarrhea and vomiting
- 9-Drug-induced diarrhea
- 10- “continuous diarrhea” or” cold humor diarrhea” (IBS) (Canon- volume 4)

Based on this explanation for IBS (IBS is caused by a cold state of bowels), Avicenna prescribes hot bathing or applying warmth over overactive bowels under emotional stresses because of IBS(Canon-volume5). The artificial warming of the bowel helps the organ to relax. If we assume “dryness” is the action of sympathetic system and wetness is the action of parasympathetic system, then we reach to the conclusion that digestive system works better in a parasympathetic- dominated state because it provides wetness and secretions and that IBS is an overactive bowel in a sympathetic-dominated state.

## Contemporary Definition and Treatment of IBS:

What Avicenna called “continuous diarrhea” is Irritable Bowel Syndrome and is defined by Rome as:

-At least 12 weeks or more, which need not be consecutive, in the preceding 12 months of abdominal discomfort or pain that has 2 of 3 features:

Relieved with defecation *and/or*

Onset associated with a change in frequency of stool *and/or*

Onset associated with a change in form (appearance) of stool

-Symptoms that cumulatively support the diagnosis of IBS:

Abnormal stool frequency (for research purposes, "abnormal" may be defined as more than 3 bowel movements per day and fewer than 3 bowel movements per week)

Abnormal stool form (lumpy/hard or loose/watery stool)

Abnormal stool passage (straining, urgency, or feeling of incomplete evacuation)

Passage of mucus

Bloating or feeling of abdominal distension (Revised Rome Criteria for IBS)

The pathophysiology of IBS in the West was first described by the English physician William Powell. Although altered motility of the colon and small bowel can be demonstrated in patients with IBS, there is a very poor correlation between IBS symptomatology and the presence of alterations in gastrointestinal motility. Likewise, drugs that alter gastrointestinal motility alone, such as antispasmodic and prokinetic drugs like metoclopramide and cisapride, have not been shown to be of any significant benefit in relieving IBS symptoms.

There is no pathognomonic pattern of gut dysmotility identified specifically with IBS, as opposed to other functional or organic disorders of the gut.

In the early 1980s, it was discovered that upon balloon distention in the rectum, individuals suffering from IBS were more sensitive to distention than were individuals

who did not suffer from IBS. The concept of "visceral" hypersensitivity has been established as the pathophysiology of IBS.

A large number of neuropeptides are involved in the regulation of both gastrointestinal motility and sensation in the gut. These include motilin, gastrin, peptide Y, cholecystokinin, serotonin, and others. But Serotonin has received the most interest for a number of reasons. Almost all (more than 90%) of the serotonin contained in the body is found in the gut and not in the central nervous system. This fact raises the reasonable question of whether modulation of serotonin action in the gut could influence IBS and other functional bowel symptoms.

IBS is a biopsychosocial disorder. This means that biological, social, and psychological components play a role in disease perception, symptom generation, and healthcare seeking.

The treatment proposed for IBS so far can be listed as follows:

- 1-Antispasmodic agents
- 2-Bulking agents, such as wheat bran, corn fiber, and psyllium
- 3- Anti diarrhea agents like Loperamide.
- 4-Antidepressants like Desipramine and Paroxetine.
- 5-HT<sub>3</sub> antagonists like Alosetron and Cilansetron,
- 6-HT<sub>4</sub> partial agonists like Tegaserod (2)

### **Avicenna prescriptions for cases of IBS:**

The *Qanun 's materia medica*, considers following substances for the treatment of IBS which he refers to it as: “continuous diarrhea” or ” cold humor diarrhea”:

- Citrus Limonia
- Cydonia Vulgaris Pers (also useful for stopping hemorrhages and menorrhagia, and also a black color dye for hair when it is applied on the hair)
- Raspberry

The treatment of spasm of the intestine if the cause is considered "IBS" is applying warmth on the stomach. The patient is advised to sit in a warm bath-tub (up to his/her xyphoid process) for half-an-hour. He is also advised to rub warm oil of Melia Azadarachta on the stomach. And cover the abdomen with warm wool clothing. (Canon volumes 2 & 5)

At first glance citrus foods (which can convert tryptophan to serotonin) prescribed by Avicenna for IBS reminds the food prescribed for migraine (3). This raises the question if the two disorders (migraine and IBS) follow the same pathological path.

**References:**

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