LOUIS BOLK INSTITUTE

Anatomy

Morphological Anatomy from a Phenomenological Point of View

Guus van der Bie MD

BOLK'S COMPANIONS FOR THE STUDY OF MEDICINE

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About the Author

Guus van der Bie MD (1945) worked as a lecturer at the Department of Medical Anatomy and Embryology at Utrecht State University, Holland from1967 to1976. Next to his practice as a general practitioner since 1976, he continued to educate physicians and therapists, and medical students at Utrecht State University and the University of Witten/Herdecke, Germany. He is a member of the Medical Section of the School of Spiritual Science at the Goetheanum, Dornach, Switzerland.

About the Project

The project *Renewal of Medical Education* aims to produce Companions that demonstrate how the insights of current biomedical science can be broadened by using the Goethean phenomenological method. This method innovates current concepts and expands the understanding of biochemical, physiological, psychological, and morphological factors in living organisms and their development in time and space, and in health, illness, and therapy. The project is commissioned by the Kingfisher Foundation, which aspires the development, application, and publication of the Goethean phenomenological research method in the widest sense, to complement and innovate the accepted scientific view and research method.

BOLK'S COMPANIONS FOR THE STUDY OF MEDICINE complement current medical education, specifically disclosing human qualities in the fundamental biomedical sciences of today.

BOLK'S COMPANIONS FOR THE PRACTICE OF MEDICINE contribute to a scientific phenomenological basis for integrative medicine and integral psychiatry.

7. The Morphology of the Digestive Tract

7.1. Introduction

On the basis of embryological development, the intestine is divided into a *foregut,* a *midgut* and a *hindgut.* The transitions are located in the duodenum just passed the opening of the bile duct and in the transverse colon at ⅓ of the lienal flexure (fig. 7.1.). This trichotomy reappears in the motor activity, and at the functional level. In the foregut, we find peristaltic propulsion and digestion; in the midgut, pendular movement and absorption and in the hindgut stasis, inspissation and bacterial colonization.

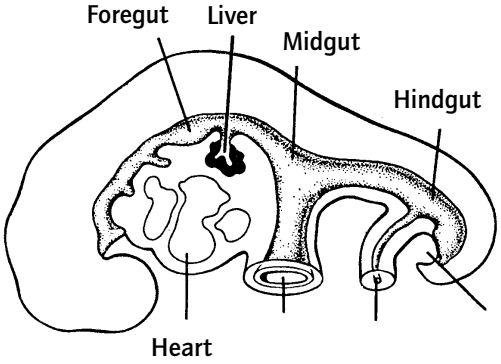

Fig. 7.1. Primitive intestine (Langman 1995)

7.2. The Foregut: Digestion and Perception

7.2.1. The Digestive Organs

A special morphological aspect of the foregut is the presence of *large excretory glands*, such as the salivary glands, the liver, and the pancreas, which all originate from the primitive intestine. These glands all have a more or less spherical shape, are located at a

certain distance from the alimentary canal and are connected to the intestine via excretory ducts. The microscopic glands of the stomach have a tubular structure and display a comparable morphology.
The mucus membrane of the foregut does not have any intestinal villi, as does the small intestine.

7.2.2. The Pharyngeal Gut

The proximal portion of the foregut (the pharyngeal gut) belongs, topographically, to the area of the branchial arches which are innervated by the cranial nerves. From the mouth to the upper third of the esophagus, we find striated muscle tissue, which can be used consciously and matches the relatively high degree of consciousness in this portion of the intestine. The movements in the area of the facial and chewing musculature of the alimentary tract, are completely voluntary, initiated by the facial and chewing muscles. This is in contrast to the movements in the distal parts of the intestine which are unconscious, rhythmical, peristaltic movements.

7.2.3. The Perception of Food

The foregut is functionally geared towards the perception and digestion of the food that has been taken in. Nutrients, such as carbohydrates, proteins, and fats are mechanically, chemically and physically reworked into smaller components.
The production and content of the digestive juices is geared towards the nutrients. A meal that is rich in fats, for example, will stimulate the production of bile. The sensory aspects of the organs of the foregut are important for this to occur and thus for the functioning of the intestines.
The *taste buds* on the tongue and the *olfactory organ* in the nasopharynx are directly related to the ability to consciously perceive the taste and smell of the food. Through the tactile receptors in the lips, tongue, palate and esophageal entrance and the receptors for warm and cold, *conscious perception* reaches from the mouth all the way into the stomach. The mouth is the only place in the organism where the secretion of digestive juices is consciously perceived in a healthy person.

The morphology and topography as well as the dynamic and function of the foregut clearly shows a relationship to cranial characteristics, consciousness, and cranial nerves.

7.3. The Hindgut

7.3.1. Stasis, Absorption, and Bacterial Colonization

The primary, distinctive sections of the hindgut are the descending colon, the sigmoid colon, and the rectum. Anatomically, the configuration is of a rather primitive character.
Macroscopically, the colon has the ability to retain intestinal content.
The primary function of the distal portion of the intestine is the absorption of water and the stasis and solidification of the food bolus. The hindgut is one of the few places in the body where bacterial colonization is normal.
The movement of the large intestine has a direct *relationship to the movements of the legs*. Activities such as walking and playing sports have a directly stimulating effect on defecation.
Defecation creates a relationship to the environment. Feces add new substances to the biological environment which can be used as fertilizers, such as in agriculture. They can add to the destruction of ecosystems, such as is the case in questionable over-fertilization.

7.4. The Midgut

7.4.1. The Rhythmical Aspect

The midgut develops into the distal duodenum, the jejunum, the ileum, the cecum with the appendix and the ascending colon.
The configuration of the midgut remains morphologically simple and is histologically, barely differentiated, in comparison with, for example, the brain or the kidneys. The most significant developments take place in the morphology and function of the intestinal mucus membranes. A rich network of intestinal villi develops extending into the intestinal

lumen. The mucus membranes display, along with intestinal villi that *extend* into the intestine, *receding* structures in the intestinal wall, as well, where absorption of nutrients and secretion of intestinal juices occurs. These are aspects of the rhythmical character of the midgut.

The rhythmical character of the midgut is expressed in two more ways:
The movements of the small intestine are primarily *rhythmic and pendular*. Because of this, food is moved back and forth in the distal and proximal direction.
Along with the *secretion* of digestive juices, the *absorption* of food elements is one of the principle functions. The balanced relationship between secretion and absorption is characteristic for this part of the intestine.

7.5. Goethean Aspects

7.5.1. Introduction

A morphological Goethean assessment of the digestive system is not simple and deserves introductory remarks.
Morphological differentiation expresses itself in complexity of tissue and organ structure.
Macroscopic examples of a high degree of differentiation can be found, for example, in the brain, the sensory organs, or the kidneys. A low degree of macroscopic differentiation can be found in the liver, the intestine, or the skin.
Examples of a high degree of *microscopic* differentiation can be found in neurons, retinal cells, muscle tissue, or erythrocytes; a low degree of differentiation in intestinal cells, liver cells or skin cells: their structure is less complex.
There is a reciprocal relationship between the ability for cell-division in tissues and the degree of morphological differentiation. A high degree of differentiation goes hand in hand with fewer cell-divisions; a low degree of differentiation with many cell-divisions.
The development of malignant tumors is directly connected to this phenomenon: low differentiation means a high chance of malignancy; high differentiation means a low chance of malignancy.

The development of the intestine from the yolk sac is coupled with little morphological differentiation: the tissue retains a primitive structure. Phenomenology is limited when faced with a dearth of notable morphological phenomena, both macroscopic and microscopic.

7.5.2. The Foregut

From the mouth through the duodenum, *morphologically*, relatively *highly differentiated* organs have developed. *Functionally* the contribution from the intracranial nervous system is the possibility of *conscious perception* in of this part of the intestines.

7.5.3. The Hindgut

As has been stated above, the hindgut has a *relationship to the limbs* through its motor system, and its connection with the biological environment.

7.5.4. The Midgut

Everything in the midgut emphasizes the singular characteristic of *rhythm*: *morphologically in* the structure of the intestinal wall and the meandering course of the intestines in the abdomen, *functionally in* absorption and secretion and the pendular movements.

➔ *In the digestive system, we have a morphological and functional trichotomy. Anatomically, the differences are limited. This is connected to the low morphological degree of differentiation in the gastrointestinal tract. Functionally, digestion, resorption, secretion, and, finally, excretion occur in succession.*

Anatomy

Morphological Anatomy from a Phenomenological Point of View

Can we give a scientific basis to our feeling that the human being has unique human features? Are the human mind and the human body 'nothing but' another variation of animal life? Can we find answers for these questions that satisfy both our head and our heart?

How these questions are answered depends on the scientific method we use. In this publication two methods are used: the current scientific method to learn about anatomical facts and the phenomenological method to understand the meaning of these facts.

Human morphology can then be understood as an expression of the unique and characteristic qualities of the human being. This results in new possibilities for understanding the relation between consciousness, psychology, behavior, and morphological aspects of the body.