

THE CLINICAL SYNDROME OF INCOMPETENT
ILEOCAECAL VALVE

THESIS

Submitted In Partial Fulfillment of
M.Sc. Degree in Internal Medicine

BY

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1986

ACKNOWLEDGEMENT

This work was undertaken on the suggestion of **Prof.Dr. MOHAMED ABDEL RAHMAN MOUSA**, Professor of Medicine, Ain Shams University, for whom I would like to express my deepest thanks for his sincere help, fruitful cooperation and kind supervision for his work, and patiently directing my attention to the proper ways.

I also wish to thank **Dr. EL-SAID M. ABO GAMRA**, Assistant Professor of Internal Medicine, Ain Shams University, for his valuable guidance and cooperation given to this research. Grateful acknowledgement and deep appreciation are conveyed to **Prof. Dr. ABDEL ZAHER HASSAN**, Professor of Radiology Ain Shams University for his constant encouragement, assistance and supervision throughout the course of this work.

It has been my pleasure and honour to work under the supervision of such knowledgeable and kind personalities.

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INTRODUCTION AND AIM OF WORK

INTRODUCTION AND AIM OF THE WORK

The gastrointestinal complaints and food intolerance are very common among the Egyptians and Arabs in general, (Avery Jones, 1968) especially those due to increase gas formation as eructation, flatulance and distension.

In most of these cases, no organic lesions were detected. The irritable bowel syndrome is one of the most common gastrointestinal tract diseases in practice, and although not being a life threatening illness, it causes great distress to those affected.

The I.B.S. is a functional bowel disorder manifested as a chronic or recurrent dysfunction of the gut at a time of life stress or emotional tension which is suggested to be a triggering factor of the irritable gut.

On doing radiological examination by barium enema, incompetence of the ileocaecal valve was looked to by the radiologists as common and normal finding.

In this study we try to clarify this point and if there is possible correlation between incompetence of the ileocaecal valve and aetiology of I.B.S.

This study is part of series of studies in this subject. The first study was done by El Banna, (1985) in partial fulfillment of M.D. degree in internal medicine under the title of "Faecal and jejunal bacterial flora in normal Egyptians and irritable bowel syndrome".

The second study was done by Asaad, (1986) in partial fulfillment of M.Sc. degree in internal medicine under the title of "Disturbance of enterohepatic circulation of bile salts in patients with incompetent ileocaecal valve.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Gut Motility

I- Esophageal Motility: (Whorwel et al., 1981).

From the physiologic point of view, the esophagus has three parts: the upper esophageal sphincter, the body and the lower esophageal sphincter. The body of the esophagus is formed by two types of muscles: striated in its upper part and smooth in its lower part. Both having sympathetic and vagal innervation.

In response to a swallow, a wave of high pressure sweeps down the length of the esophageal body, driving a bolus before it. Distension of the esophagus initiates the so called secondary peristalsis, which clears away acid after gastroesophageal reflux (Goyal, 1976).

II- Gastric Motility: (Guyton, 1981)

The motor functions of the stomach are three folds:

- (1) Storage of large quantities of food untill it can be accommodated in the lower portion of the gastrointestinal tract.

- (2) Mixing of this food with gastric secretions untill it forms a semifluid mixture called chyme.
- (3) Slow emptying of the food from the stomach into the small intestine at a rate suitable for proper digestion and absorption.

(1) Storage function of the stomach:

Normally, the body of the stomach has relatively little tone in its muscular wall so that it can bulge progressively outward, thereby accomodating greater and greater quantities of food up to limit of almost 1 litre. The pressure in the stomach remains low untill this limit is approached for three reasons:

- a) The smooth muscle in the wall of the stomach exhibits a quality of plasticity, which means that it can increase its length greatly without significantly changing its tone.
- b) The greater the diameter of the stomach, the greater also becomes the radius of curvature of the walls. The stretching force on the walls increases in direct proportion to this radius of curvature (Law of Laplace):

therefore, the pressure inside the stomach increases only slightly despite marked distension.

- c) Stretch of the stomach also causes a vagal reflex that inhibits muscle activity in the body of the stomach.

(2) Mixing in the stomach the basic electrical rhythm:

When the stomach is filled, weak constrictor waves, also called mixing waves, move toward the antrum along the stomach wall approximately once every 20 seconds. These waves are caused by a basic electrical rhythm consisting of electrical "slow waves" that occur spontaneously in the longitudinal muscle of the stomach wall and then spread by conduction to the circular muscle.

As the waves move along the stomach wall, they not only cause the secretions to mix with the stored food, but they also provide weak propulsion to move these mixed contents into the antrum.

As the constrictor waves progress from the body of the stomach into the antrum. They usually become more intense some becoming extremely intense and providing powerful peristaltic constrictor rings that force the antral contents

under high pressure toward the pylorus. Yet the opening of the pylorus is small enough that only a few millilitres of antral contents are expelled into the duodenum with each peristaltic wave. Instead, most of the antral contents are squirted backward through the peristaltic ring toward the body of the stomach.

As the stomach becomes progressively more and more empty, these intense waves begin farther and farther up the body of the stomach, gradually pinching off the lower most portions of stored food, adding this food to the chyme in the antrum.

Hunger Contractions:

They are usually rhythmic peristaltic contractions probably representing exacerbated mixing waves in the body of the stomach often occurs when the stomach has been empty for a long time. However, when they become extremely strong, they often fuse together to cause a continuing tetanic contraction lasting for as long as two to three minutes.

Reflex Regulation of Stomach Contractions:

Distension of the stomach by food initiates vagal afferent signals that pass to the medulla oblongata and reflexly inhibit the tone in the storage area of the

stomach. At the same time these signals increase the rate of stomach secretion and the intensity of both the mixing and peristaltic waves. Thus the rate of digestion and removal of the stored food is accelerated.

(3) Emptying of the Stomach:

Basically, stomach emptying is opposed by resistance of the pylorus to the passage of food, and it is promoted by peristaltic waves in the antrum of the stomach. Usually these two are reciprocally related to each other with those factors that increase antral peristalsis usually decreasing the tone of the pyloric muscle.

Role of antral peristalsis in stomach emptying-pyloric pump:

The intensity of antral peristalsis changes markedly under different conditions, especially in response to signals both from the stomach and from the duodenum. Therefore the intensity of antral peristalsis is the other principal factor determining the rate of stomach emptying. When pyloric tone is normal, each strong antral peristaltic wave forces several millilitres of chyme into the duodenum. Thus, the peristaltic waves provide a pumping action that is frequently called the pyloric pump.

Emptying of the stomach is controlled to a moderate degree by stomach factors such as the degree of filling in the stomach and the excitatory effect of gastrin on antral peristalsis. However, probably the more important control of stomach emptying resides in feed back signals from the duodenum, including both the enterogastric reflex and the hormonal feed back. These two feedback signals work together to slow the rate of stomach emptying when:

- a) Too much chyme is already in the small intestine or
- b) The chyme is excessively acid, contains too much protein or fat, is hypotonic or hypertonic or is irritating.

In this way the rate of stomach emptying is limited to that amount of chyme that the small intestine can process.

III- Small Intestinal Motility:

Methods of Study:

In man intestinal movements are studied by either:

- (1) Studying X-ray films of the small intestine after taking a barium meal.
- (2) By the balloon method: The balloon is swallowed by the patient and is connected by a rubber tube to a sensitive membrane (called Mary's tambour) that records the intestinal movements on a drum.

Types of Movements:

(1) Peristalsis (neurogenic movement):

There are 3 types of peristaltic movements:

- (a) Propulsive peristalsis: This movement consists of waves of dilatation followed by waves of constriction, that travel distally towards the colon. It occurs in the 3 parts of the small intestine (duodenum, jejunum and ileum).

Intestinal peristalsis is initiated by intestinal distension which through the local axon reflexes leads to contraction above and dilatation below the distended segment leading to propulsion of food forward. This effect has been called the myentric reflex or starling's law of the intestine.

- (b) Antiperistalsis: It is a peristaltic movement that occurs in the opposite way i.e. travel proximally towards the stomach. It occurs only in the duodenum and at the lower end of the ileum i.e. at both ends of the small intestine. It prevents rapid evacuation of the intestinal contents into the colon, so providing sufficient time for absorption and digestion.