A PILOT STUDY ON THE INCIDENCE OF DIFFERENT TYPES OF COLOPATHY IN OUTPATIENTS WITH COLON SYMPTOMS

THESIS

SUBMITTED FOR PARTIAL FULFILMENT FOR THE MASTER DEGREE IN GENERAL MEDICINE

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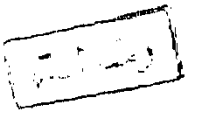

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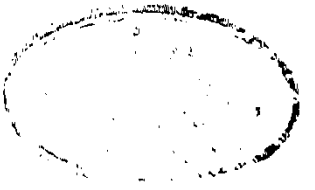

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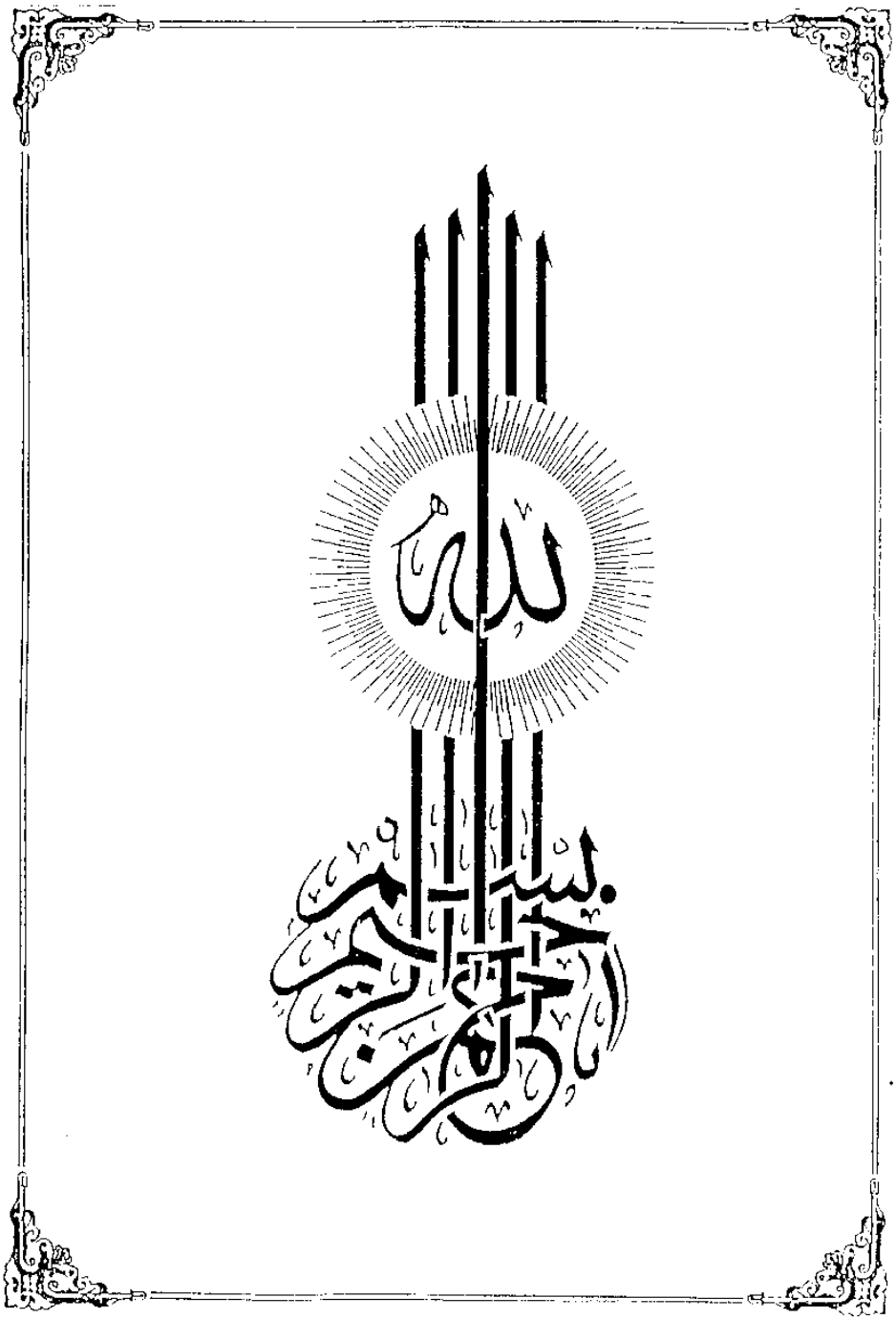
TO MY HUSBAND



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C O N T E N T S

Introduction &
Aim of the Work.

INTRODUCTION

The practice of clinical gastroenterology has changed greatly in the past few years. The prevalence of some disorders is declining while that of others is rising. With increasing pressure on inpatient facilities and the availability of better diagnostic methods, such as fibre-optic endoscopy, a growing proportion of patients is being treated in outpatient clinics.

Symptoms of colopathy including abdominal distress and pain, changes in stool formation, changes in stool calibre, flatulence and backache are shared by various organic and functional diseases of the colon. Complete, exact diagnosis needs more than a simple clinical assessment and stool examination for parasites. The presence of *Entamoeba histolytica* cysts in the stools does not necessarily mean that the symptoms are due to infection by this parasite, the patient may well be suffering from the inflammatory bowel disease or the irritable colon syndrome

AIM OF THE WORK

This work was intended to arrive at the real size of the problem of irritable colon syndrome among patients attending the outpatient department with symptoms of colopathy.

Review of Literature

THE COLON

*SURGICAL CONSIDERATION:

Gross characteristics (According to Gleisenger, 1973).

The length of the colon varies between 2.54 and 3.69 times the body height. The diameter of the colon diminishes from caecum to anus. The colon is characterized grossly by some tortuousity and redundancy of the sigmoid and by two sharp angulations, the splenic and hepatic flexures, the former situated superior to the latter.

The mucosa of the colon is flat. However, it is thrown into some folds, the plicae semilunares. It is highlighted by the presence of epithelial crypts forming the glands of Lieberkühn. These glands open all along the mucosa into the lumen and secrete the mucus which allegedly helps to lubricate the passage of stool.

*HISTOLOGICAL CONSIDERATION: (According to Gleisenger, 1973, Abd Al-Kader, 1982).

The wall of the large intestine consists of four distinct layers. The outermost layer, the serosa, is composed of mesothelial cells to which are attached fatty appendices epiploicae, which are extensions of peritoneal fat. The serosa covers only the portions of large bowel which lie within the peritoneal cavity; thus it is not found in the rectum.

The muscle coat, found immediately beneath the serosa, is composed of an inner circular muscular layer forming a

tight spiral circumferentially along the course of the colon and an outer longitudinal muscle layer which is distinctive because it is composed of three separate longitudinal strips (taeniae coli) which run from the rectum to the caecum. The ganglion cells of the myenteric plexus of Auerbach may be found between the circular and longitudinal muscle layers, with the majority being located along the external surface of the circular muscle coat. Unmyelinated postganglionic fibers are also found in the circular muscle layer and communicate with the submucosal plexus of the nerves.

The submucosa of the colon contains many blood and lymph vessels, dense connextive tissue sparsely infiltrated by cells (lymphocytes, plasma cells, mast cells, macrophages, and eosinophils), and the unmyelinated nerve fibers and ganglion cells that form the submucosal or Meissner's plexus.

The innermost layer of the mucosa is separated from the submucosa by the muscularis mucosa, a layer of smooth muscle cells roughly eight to 12 cells thick. The mucosa of the large intestine differs from that of the small intestine in that villi are absent; instead, the absorptive surface itself is flat. However, numerous straight tubular crypts up to 0.7 mm in length are normally present and extend from the muscularis mucosa to the flat absorptive surface. The crypts and the absorptive surface are lined by a continuous sheet of columnar epithelial cells which are separated from the mesenchymal tissue of the lamina propria by a well defined, continuous

basal lamina applied to the basal plasma membrane of the epithelial cells. The crypt epithelium is simple columnar showing 6 types of cells:

(1) Undifferentiated Columnar Cells: They are short columnar cells present at the bottoms of the crypts.

(2) Columnar Absorbing Cells: They are present in the top parts of the crypts. They are tall columnar cells with a brush free border which is due to microvilli which are covered by glycoprotein cell coat (rich in hydrolytic enzymes; alkaline phosphatase, lactase and isomaltase).

(3) Goblet Cells and Oligomucous Cells: Goblet cells are present in the superficial parts of the crypts. Oligomucous cells are less differentiated, intermediate forms of goblet cells, found in the crypts.

(4) Paneth Cells: They are present in groups at the bottoms of the crypts. They secrete lysozymes which have a bactericidal effect.

(5) Entro-endocrine Cells: They constitute 1% of the cells in the crypts. They are of different types. Some secrete serotonin, others secrete intestinal hormones (secretin, cholecystokinin) and some may secrete enderphin and somatostatine.

(6) Caveolated Cells (Brush Cells): They are rare cells present in the crypts. Their function is unknown.

***PHYSIOLOGY OF THE COLON:**

The main functions of the human colon are storage of intestinal contents prior to discharge, absorption of water,

electrolytes and bile acids and, to a minor extent, secretion. The last function mainly concerns mucus and electrolytes, particularly K^+, but possibly HCO_3^- also. Reservoir function and transit, of course, are closely related, (Sleisenger, 1973).

...Absorption:

An extremely important function of the human colon is absorption of sodium and water. This process proceeds through the length of this organ. Most absorption of water and electrolytes takes place in the right colon with progressively less activity caudad. This segment of the intestine receives fluid delivered to it, containing, per 24-hour period, 40 to 70 mEq of sodium, 3 to 6 mEq of potassium, 20 to 40 mEq of chloride, and 30 to 35 mEq of bicarbonate in a volume of about 500 to 800 ml. Analysis of stool water (100 to 150 ml per day) reveals sodium concentrations of 25 to 49 mEq per liter and potassium concentrations of 80 to 132 mEq per liter. Stool water thus has a high potassium and low sodium concentration, the ratio of sodium to potassium concentration being 0.3 in normal stool in contrast to 12 to 20:1 in terminal ileal fluid. The explanation appears to be a high transmembrane potential (PD) across colonic mucosa generated by active sodium transport, with potassium diffusing from blood to lumen down an electrochemical gradient, (Fordtran and Ingelfinger, 1968).

Fecal water contains about 15 mEq per liter of chloride, a concentration much lower than that in plasma.

Under abnormal conditions such as sodium restriction in the diet or during periods of administration of salt-retaining hormones of the adrenal gland, the colon demonstrates its ability to increase absorption of sodium. Under these conditions, the ratio of sodium to potassium in stool water falls below 0.3. The potential difference (PD) of rectal mucosa increases, making the measurement a good clinical test of aldosteronism. (Levitan and Ingelfinger, 1965).

Absorption of Bile Acids:

Bile acids are absorbed from the colon by nonionic (passive) diffusion. This mechanism is important in the absence of the distal small intestine, helping to maintain the total bile salt pool of the body. Ionic diffusion may also be responsible for some uptake by the mucosa. (Heiner, and Lack, 1968).

Effect of Bile Acids on Transport:

Unconjugated bile acids affect the transport of water and electrolytes in the colon. (Mekhjian and Phillips, 1970). When conjugated bile acids are not normally absorbed in the distal small intestine, as, for example, following ileal resection or because of extensive ileal disease, these substances are hydrolyzed and metabolized by colonic bacteria; the products exert an effect on the function of the colonic mucosa. In man the diarrhoea which results from such critical situations has been termed "choleretic