

**Original Articles.****PREVENTION AND INHIBITION OF PERITONITIS WITH ESPECIAL REFERENCE TO THE HARM DONE BY CATHARTICS IN INCIPIENT PERITONITIS.\***

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At the very beginning of this paper it seems important to emphasize the fact that treatment must be directed almost entirely toward prevention and inhibition of peritonitis, because this will reduce the mortality from this disease enormously. Physicians in general practice who have appreciated this fact have almost completely eliminated deaths from peritonitis in their practice, while others whose attention has been directed toward the cure of peritonitis have succeeded in reducing their mortality from this disease only to a very slight extent. Prevention must depend largely upon a careful early diagnosis, and inhibition upon early treatment in cases in which a circumscribed or a beginning diffuse peritonitis exists when the patient comes under the physician's care by definitely planned methods which will prevent diffusing septic material from its circumscribed location to other portions of the peritoneal cavity.

There must, of course, always be a certain percentage of mortality because some cases will not reach the care of the physician until they are beyond the period at which prevention or inhibition is possible, but this class is constantly decreasing because physicians are becoming more thorough in examining their patients, and laymen are learning the importance of early intervention. There will also always be a percentage of mortality in cases in which the primary infection is overwhelming, as in some cases of perforation of gastric, duodenal or typhoid ulcers or ruptured gall bladder, although in all of these cases early closure of the perforation, sponging away the extravasated substance and thorough drainage has reduced the loss from this source to a marked degree. Moreover, typhoid perforations are becoming very scarce in communities which are sufficiently civilized not to drink water infected with sewerage and those who will not permit their food to be infected by flies.

The mortality from peritonitis at the present time is by far greatest in cases in which the infection comes from the vermiform appendix and those of puerperal origin.

Medical literature shows absolutely that there is no form of treatment of much use in peritonitis which is so far advanced that the patient is suffering to a marked degree from general sepsis. We might as well think of saving a wooden building after fire has partly destroyed all of the walls and floors. It is unreasonable to expect good results under these conditions.

Our attention must be directed first toward

prevention, which is possible in most cases, because peritonitis results from conditions which can be recognized and permanently relieved before they have given rise to peritonitis by making a careful physical examination in every case suffering from intra-abdominal conditions. A perforation of the gall bladder is always preceded by gastric disturbances which should result in a physical examination, which, in turn, should establish a diagnosis of cholecystitis or cholelithiasis. An operation for the relief of this condition would prevent the perforation and peritonitis.

The same can be said of other conditions which later result in peritonitis.

No physician has a right to prescribe for the relief of any intra-abdominal condition without having made a physical examination.

The calamity which may follow the crime of a superficial examination in chronic cases after weeks or months may follow after days or hours in acute cases.

By giving something for the relief of indigestion in the chronic case, without a physical examination demonstrating the presence of a gastric or duodenal ulcer or gallstones, the physician may be responsible for the peritonitis which may occur weeks or months later as a result of perforation. Quite as certainly, by giving a cathartic for acute indigestion without a physical examination in a case of gangrenous appendicitis, he may cause a distribution of the infectious material over the entire peritoneal cavity by stimulating peristalsis, producing a diffuse peritonitis. This in turn may destroy the life of the patient in a few days. For a fairly trained diagnostician it is possible to recognize all of these conditions, whether they be acute or chronic, in time to prevent or inhibit peritonitis if he makes a careful physical examination when the patient first comes under his care. At the end of this paper a number of conclusions will be added, which will contain the various elements to be considered in planning the prevention and inhibition of peritonitis, but as a discussion of all of these features would be impossible in one paper only, the part played in the production and acceleration of peritonitis by the use of cathartics will be discussed more extensively in the present paper. Undoubtedly, many patients lose their lives from general peritonitis because they were given either cathartics or food or both by mouth after the beginning of the peritoneal infection. In a large number of cases which have come under my personal observation, there has not been a single case of death from peritonitis in which neither cathartics nor food had been given by mouth after the beginning of the attack.

**THE INTRODUCTION OF CATHARTICS IN THE TREATMENT OF PERITONITIS.**

Thirty-five years ago the phenomenal success in abdominal surgery experienced by Lawson Tait was attributed by many to the fact that he administered cathartics to his patients directly after performing laparotomies, and the fact that

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his patients regularly recovered without symptoms of peritonitis after ordinary abdominal operations performed for non-septic conditions, while other surgeons lost similar patients constantly from peritonitis at this period, led to the conclusion that cathartics prevent peritonitis. He says, in the Hastings essay for 1873, "The administration of laxatives within a few hours after the operation is becoming quite a common practice with me, this innovation, in my opinion, being possibly conducive in some measure to my increased success."

This theory that cathartics can prevent or inhibit peritonitis appeared very frequently in essays and in textbooks during the following quarter of a century, although, in the meantime, every surgeon had learned the fact that the absence of peritonitis following Tait's operations was due to the circumstance that he was a clean, rapid surgeon, who neither infected his patients nor unnecessarily traumatized the peritoneum, and that because neither infection nor trauma were present, the cathartics he gave were harmless.

During these years many medical books and articles contained statements similar to the following referring to the treatment of acute appendicitis. It will not be necessary to quote from more than one of the best authorities who now never gives either cathartics or food in acute infection of any portion of the peritoneal cavity because, during this period, all of the best authorities, like Deaver, Murphy, Minter, Fowler, Morris, made similar statements in their books. "The bowel must be kept clear from irritating fecal matter, by enemata if possible, by a good cathartic if necessary." "Evidence is not wanting of successful results obtained by medical treatment, especially in the use of saline purgatives."

Only patients in whom the infection was still confined to the appendix and those in whom the infection had been sufficiently circumscribed by strong adhesions to make dissemination of septic material impossible, which, according to the careful studies of Stanton, rarely occurs before the seventh day, furnished safe cases for this treatment.

At that time this surgeon's mortality in operations for appendicitis was almost 10%, and since prohibiting all forms of food and cathartics by mouth, and giving normal salt solution by rectum, his mortality has been reduced to less than one fourth of this percentage in precisely the same class of cases.

#### MODE OF ACTION OF CATHARTICS.

In cases in which the primary infection comes from a circumscribed point like the appendix, or a leaking pus tube, or a nearly perforated gastric, duodenal or typhoid ulcer with slightly adherent omentum covering the point of danger, the conditions are fair for obtaining a circumscribed instead of a diffuse infection. The same is true in case of a gall bladder with a gangrenous mucous lining.

In case of the appendix and the Fallopian

tube, the cecum, sigmoid and the omentum are likely to confine the infection to the pelvic portion of the abdominal cavity. In all of the other instances, the burden of the work of protection falls upon the omentum, but so long as the infection is in one circumscribed location, the entire free portion of the omentum can and will arrange itself about this point and will prevent the infectious material from passing on to other portions of the peritoneum. All of the physiological forces become active to prevent the escape of this septic material to other portions of the peritoneal cavity. The colon becomes filled with gas and acts as a cofferdam. The small intestines, if not disturbed by cathartics or food, form an embankment about the diseased area.

These conditions have been observed innumerable times by surgeons who have operated in acute cases.

The nausea prevents the patient from taking food unless this is forced upon him by some foolish friend or unless it is prescribed by some incompetent physician.

The abdominal walls become rigid and form an anterior splint. Everything is as favorable as can be for the process of repair, which consists in the concentration of the activity of millions of leucocytes in the infected area and the production of antibodies in the blood and the limitation of nutrition of the septic micro-organisms to an area in which they will soon become reduced in virulence.

It is true that the alimentary canal may contain septic material, but this will soon be excreted through the stomach and can be readily removed by the use of gastric lavage. If no further food of any kind is given by mouth, the small intestines will soon be free from septic material, and gastric lavage applied once or twice will usually suffice to remove the septic material excreted into the stomach, although in rare instances it is necessary to repeat this lavage several times a day for several days.

Were one to continue placing food in the stomach during the progress of the disease, then there might be some doubt as to the choice between the two evils of leaving a quantity of decomposing substance in the alimentary canal to poison the patient, or forcing it out by means of a cathartic and incidentally killing the patient by carrying the septic material from this circumscribed area to the other peritoneal surfaces by the peristalsis caused by the cathartic.

Since it is possible to supply the necessary amount of nourishment by rectal alimentation and a sufficient amount of fluid by the continuous normal salt solution introduced by the drop method into the rectum, according to the system originated by Murphy, there is no reason why one should risk harm by introducing food or cathartics by mouth.

No good can come from it because it is not needed. That harm does come from it is not only plain from the theoretical reasons, but has been demonstrated in hundreds of cases.

This applies to all cases without regard to the

form of surgical treatment that may be chosen in any given case.

Whatever form of surgical treatment may be contemplated in case of any form of existing peritonitis, the results must be better if the infection is not diffused by peristalsis. There can, therefore, be no reason why peristalsis should be initiated by the use of cathartics. Even the smallest amount of cathartics may change a harmless circumscribed infection into a serious diffuse peritonitis.

One demonstrable change consists in the rapid increase in leucocytosis even after the administration of a small amount of cathartics. One-tenth grain of calomel with 1 gr. of soda may increase leucocytosis several thousand within a few hours, and the same is true of other cathartics and also of enemata, except when given by the drop method. We have had an opportunity to observe this in a hospital whose beds are open to the general practitioners of the community in which it is located. Some of these practitioners give cathartics habitually as a form of initiative treatment while they are trying to think what form of treatment is indicated. This has given us an opportunity to study the effects of cathartics upon the leucocytosis in these cases.

My former assistant, Dr. John L. Yates, has proven conclusively, by a large series of experiments upon animals, that infectious material is rapidly diffused by the administration of food or cathartics, because of the establishment of peristalsis. Injecting lampblack into the abdominal cavity, he found that this remained in a circumscribed location so long as the intestines remain at rest; but upon the administration of cathartics, it is rapidly diffused over the entire peritoneal cavity. The same was true of septic material introduced in the same manner.

Constipation is looked upon rightly as a cause of ill health; consequently it is but natural that, counting upon the law of probabilities, a physician or a layman who gives a cathartic in every case, with or without having previously made a diagnosis, will have fair results in most patients who are not suffering from peritonitis. Moreover, in cases in which there is not as yet a circumscribed peritonitis, especially in catarrhal appendicitis, the patient feels better after the use of a cathartic and, as there is no septic material present to be diffused throughout the peritoneal cavity, no harm can come to this class of patients.

If one can be absolutely certain, therefore, in any given case, that there is no circumscribed infection, a cathartic can, of course, be given safely in that case. If no harm comes from it, the diagnosis has been confirmed, but whenever there is the slightest doubt it would be foolish to take such a risk for the sake of confirming a diagnosis.

That this is safe in only a very small percentage of cases was proven by Murphy's statistics of 1895, which showed that in 94% of cases of acute appendicitis pus is found outside the appendix at the time they came under treatment.

It is plain that the 6% in whom the infection is still confined to the appendix will all recover under proper surgical treatment, and the 94% in whom the infection is already beyond the tissues of the appendix must be exposed to great risk if peristalsis is caused by the administration of cathartics.

#### EFFECT OF CATHARTICS IN CASES OF MECHANICAL OBSTRUCTION OF THE INTESTINE.

However harmful it may be to administer cathartics in cases suffering from circumscribed peritonitis, it is still more harmful to administer these remedies in cases suffering from mechanical obstruction of the intestines, no matter whether this be due to strangulated hernia, volvulus, Meckel's diverticulum, constricting bands of adhesion, intussusception, kinking of the intestines, impacted gallstone, impacted submucous lipoma or fibroma in the intestinal wall or obstruction due to malignant growths in the intestinal wall or pressing upon it from the outside.

In every case in which there is even a suspicion of mechanical obstruction of the bowel, gastric lavage should be instituted at once and absolutely nothing should be given by mouth.

The intestine above the point of obstruction suffers so severely as a result of the pressure from the peristaltic action caused by cathartics that the walls become permeable to the passage of septic material, which is proven by the presence of micro-organisms in the peritoneal fluid, and the mortality is at least four times as great in cases that have received cathartics than in those that have received none. In many cases the intestine may even be perforated above the constriction as a result of the use of cathartics. All of these conditions I have encountered many times in practice.

Puerperal sepsis and post-operative sepsis must, of course, be eliminated by proper prophylaxis.

Although I am convinced that abstaining from the use of cathartics alone in cases of incipient peritonitis is the most important means of inhibiting this disease, still I believe that it is most important to bear in mind all of the following conclusions and that, when these have been thoroughly applied in practice, deaths from peritonitis will be almost entirely eliminated. These conclusions are quite as applicable to cases which are treated surgically as those treated without surgical intervention.

It would be most unfortunate if, by directing attention particularly to the harmful effects of cathartics in peritonitis, this paper should lead especially the general practitioner to think that this is the only dangerous form of treatment, because the errors pointed out in the following conclusions have also destroyed an enormous number of human lives, and by constantly keeping them in mind any general practitioner can reduce his mortality enormously.

#### CONCLUSIONS.

1. A careful physical examination should always be made in cases suffering from gastric

disturbances, nausea, vomiting, gaseous distention or pain in any portion of the abdomen, so that an early diagnosis can be made. In acute cases, violent manipulations are dangerous and not necessary during examination. They may cause a diffusion of septic material.

2. A diagnosis of chronic appendicitis, gastric or duodenal ulcer or gallstones should be made through a careful study of the history and physical examination, and relieved by proper treatment before a perforation is possible.

3. Patients suffering from intestinal obstruction, whether this be due to strangulated hernia, constriction by bands or adhesions, volvulus, intussusception or kinking of intestine, Meckel's diverticulum, gallstone or carcinoma, should be operated at once and they should never, under any condition, receive either cathartics or food by mouth after this condition is even suspected.

4. Gastric lavage should be employed in these cases at once and again immediately before operation, and it is well to leave the stomach tube, preferably the form invented by Kausch, in the stomach to drain out any intestinal fluid which may regurgitate during the operation. Many of these cases can be operated under local anesthesia.

5. Opium in any form should never be given before a diagnosis has been made, and never in the presence of any form of peritonitis, unless gastric lavage has been made, and the introduction of every form of nourishment and cathartics by mouth is absolutely prohibited. This applies to even the simplest forms of liquids, like beef tea or broth, and also to the use of champagne and other stimulants.

6. This applies quite to the same extent to post-operative treatment.

7. In military surgery it is most important as a prophylactic measure that soldiers enter the firing line with empty stomach and intestines.

8. Abdominal wounds made during battle, with large objects like splinters from shells, indicate immediate operation.

9. Abdominal wounds inflicted in battle by small caliber bullets, in the absence of hemorrhage, should be treated by absolute rest; not even water should be given by mouth.

10. An exception should be made in cases which can be in the hands of the operating surgeon with satisfactory assistants and facilities within two hours after the injury. Under these conditions an immediate abdominal section is indicated.

11. Gastric lavage should be made at once in every patient suffering from any form of peritonitis, except from stomach or duodenal perforation, if nausea or vomiting or gaseous distention is present, no matter what other form of treatment may be contemplated.

12. No food of any kind whatever and no cathartics should ever be given by mouth in the presence of peritonitis, no matter what other form of treatment may be contemplated.

13. Even water by mouth should be prohibited until the patient is well on the way to recovery.

14. Instillation of normal salt solution by the drop method, by rectum as introduced by Murphy, or by some other safe non-irritating method is one of the most valuable means of inhibiting peritonitis. It is well to give normal salt solution continuously from one or two hours and then to interrupt this treatment for two hours.

15. In rare cases in which this method cannot be employed, normal salt solution should be given subcutaneously in quantities of 500 to 1,000 ccm. sufficiently often to overcome thirst and keep the blood vessels filled.

16. Large enemata, except by the drop method, should never be given in the presence of peritonitis.

17. In order to prevent post-operative peritonitis, it is important never to traumatize the intra-abdominal organs unnecessarily during operation.

18. Much less handling of the intestines is necessary if these are not distended with gas, a condition which can best be secured by giving the patient two ounces of castor oil on the day before the operation, but this should never be given in the presence of even the slightest amount of peritonitis of any form.

19. Gastric lavage following abdominal section often prevents incipient peritonitis from progressing by inhibiting peristalsis; it should always be employed in the presence of nausea or vomiting or gaseous distention. In order to prevent gagging, it is well to spray the pharynx thoroughly with a 2% solution of cocaine ten minutes before the stomach tube is introduced.

20. In acute appendicitis the appendix should be removed before the infection has extended beyond the organ. If conclusion No. 1 is adhered to, this can be done in almost every case with almost perfect safety, because the patient can then be placed in the hands of a competent surgeon within thirty-six or forty-eight hours from the beginning of the attack.

21. In subacute and chronic appendicitis, the appendix should be removed before it has an opportunity to cause an acute attack.

22. In acute appendicitis which has been carried through an attack without an operation, it is well to confine the patient absolutely to a liquid diet until his appendix has been removed.

23. In cases of acute appendicitis, either perforative or gangrenous, which have received some form of food or cathartics after the beginning of the attack, which reach the care of a surgeon too late for a safe early operation and are suffering from beginning diffuse peritonitis, gastric lavage, absolute abstinence from food and cathartics by mouth and the slow instillation of normal salt solution by rectum are indicated.

24. This will result in the increase of resistance against infection to such an extent that 97% of these cases of perforative or gangrenous appendicitis can later be operated with safety.

25. Feeding should be entirely by enemata, preferably consisting of 1 oz. of a commercial concentrated liquid food dissolved in 3 oz. of normal salt solution given slowly every three or four hours through a small rubber catheter intro-

duced into the rectum not more than three inches.

26. From ten to thirty drops of deodorized tincture of opium should be added to each rectal feeding, until there is no longer any pain.

27. Placing these patients in the Fowler position greatly increases their safety.

28. The application to the abdomen of a large, hot, moist dressing of equal parts of a saturated solution of boric acid and alcohol greatly increases the comfort of these patients and prevents harm from manipulations.

29. It is important for the general practitioner and the general public to become familiar with the danger of giving any kind of nourishment or cathartics by mouth in the presence of impending peritonitis from any cause and that this applies to milk, broth and other forms of liquids and even to giving of water by mouth.

#### SUGGESTION: THE MAINSPRING OF HYPNOTISM AND PSYCHOTHERAPY.

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The aim of this article is to establish a helpful and practical attitude toward hypnotism and psychotherapy for the average young man of medicine, whether or not he would use these means as a therapeutic measure; to set forth in a chapter certain facts regarding suggestion and suggestive treatment, whether the object be to establish a hopeful attitude toward the relief of a minor ailment or all that is implied in a course of hypnotic suggestion designed to overcome a firmly rooted drug habit.

It was the writer's inclination in the first years following graduation from medical school to look askance at the word "hypnotism," and to devote little time and no patience to psychotherapy. This is commonly the attitude of the hospital interne. His motto might be, "Nothing, save by the knife, through the microscope or in the test tube." In time he may admit that there is more in heaven and on earth than is contained in this philosophy, or, which is too often the case, he may stick to his first opinion. In these matters the average teacher is agnostic and either silent or cynical. His only dogma is negation. By the authority of years or responsible position the inquirer is usually crushed with a sardonic, "Let it alone; we only know enough of this subject to ignore it." Meanwhile certain of the beginner's patients pass from his hands to the affectionate embrace of Confucius, Brahma, H. T. Still or Mary Baker G. Eddy. Is it an exaggeration to say that the adherents of these or kindred creeds have in every case passed dissatisfied through the hands of from two to a dozen regular practitioners?

Shortly before the composition of these lines the writer lost a patient, a young man afflicted with a painful spot of six years' standing, situated on the inner surface of the left calcaneum, anterior to the attachment of the tendo achilles, but below the bursa. He was slow to arrive at a correct diagnosis, and, instead of diverting the patient's mind

from his heel, he did the very opposite. The sufferer went to an osteopath, who reduced a musculo-tonic dislocation of one or several lumbar vertebrae and the man was cured! Does this experience sound familiar to any one?

The medical schools, save very few, give no definite course in the principles and application of suggestion; while to forestall us certain contemporaries are hard at work on the principles and practice of osteopathy, or of similar systems which, with a hundred variations on the same inveterate theme, "cure without drugs."

For reasons which will appear, let us consider first hypnotism, then psychotherapy.

Who first elicited and observed the phenomena of hypnosis is an historical datum lost in the venerable traditions of the far East. It was known to individuals among the Egyptians, Greeks and Romans. In the Christian era the observance of hypnotic phenomena under various terms was recorded by such men as Avicenna, Paracelsus, Burgravius, Van Helmont, Cardanus, *et al.* Hypnotism was first given a prominent place in modern literature by Mesmer (1734-1815). He failed to extricate the facts from a hopeless tangle of extravagant fancies associated with the terms "animal magnetism," "magnetic fluid," "clairvoyance," etc., a confusion which still enshrouds the popular conception of it. Abbé Faria, in 1814, proffered a rational view of hypnotism, but his ideas left no impression on contemporary opinion.

John Elliotson (1791-1868) endeavored to view the subject from the standpoint of an unbiased observer of phenomena and did much to take hypnotism out of the realm of the mysterious and occult. Still his writings were by no means free from the errors propagated by the school of Mesmer, and it was due to this that he aroused most bitter opposition from his colleagues.

James Esdaile, surgeon (1808-1859), made practical use of hypnotism, paid little attention to theory and performed many hundreds of operations with hypnotic anesthesia and analgesia. However, like Elliotson's, his efforts to gain recognition failed because of the attitude of the profession. His writings were never admitted to the sacred pages of the *Lancet* and were published in pamphlet form. To-day they are to be found only in the museums of literary curiosities.

James Braid (1795-1860) was the first to make for hypnotism a place in scientific literature. He gained posthumous credit for having in unpublished writings reduced the subject to the rational basis of to-day, anticipating the work of the Nancy school (Bramwell).

Charcot (1825-1893) was the leader of the French school which stimulated general interest in hypnotic phenomena and systematized knowledge of the manifestations of hysteria. Unfortunately he identified the pathological condition of hysteria with the artificially induced condition of hypnotism, engendering in his followers an exaggerated abhorrence of hypnotism, an attitude which was disseminated so broadly, especially in the United States, that it is still in some regions