THE COLON AND COLITIS.*

BEING THE ANNUAL ORATION TO THE MEDICAL
SOCIETY OF LONDON.

BY

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To attempt to traverse this wide subject within the time at my disposal would show a want of appreciation of its complexity and importance. I propose to try and requite the honour you have conferred upon me by presenting to you some thoughts and reflections based on observation, study, and clinical experience. But for the fact that we have an enjoyable function in prospect I should regret that no discussion can follow my remarks, seeing that it is a subject on which our President can speak as an outstanding authority.

The importance of the colon is borne in upon us by the recurring experience of our daily lives. On its periodic functioning depend our health, comfort, mental alertness, and emotional outlook to a greater degree than we care to confess. Who is more of a misanthrope than the subject of the loaded colon? Optimism and pessimism in outlook may be decided by the state of the colon, good temper or bad temper, sunshine or cloud in the domestic circle. Recall, too, the contrast between the clear skin and pinkness of complexion on the one hand and the muddy skin and sallow mien on the other hand, the former associated with the functioning and the latter with the non-functioning colon. And another fact worthy of note is the extraordinary rapidity with which unloading of the lower bowel is followed by relief of general abdominal discomforts and the re-establishment of a sense of well-being.

This responsiveness, this influence for weal or woe, presents the colon to our minds as an organ with a highly developed functional activity closely linked up not only with other portions of the alimentary tract, but with the higher nervous centres. They do not suggest the colon as playing a mere mechanical part, or as a structure of declining importance—a fading evolutionary remnant, to be lightly cast aside as of doubtful utility to its owner.

When we contemplate the many and rapidly changing demands which modern life makes on our digestive system, and side by side with this the exceeding slowness with which adaptive changes in structure evolve, it is small wonder that there is an increasing strain on functional efficiency and that function gives out. This tax on function is in some measure due to the food we eat and the way we eat it, but in perhaps greater measure to the strain and stress associated with the pace of life.

From this it emerges that the determination of disease in part depends on where stress falls, and how far the individual is able to meet the stress. There is a group of people whose abdomens are over-responsive to nerve impressions. Fatigue, fear, anxiety, intensive endeavour, manifest themselves in their hollow viscera, and, it may be, through the agency of internal secretions. So do reflex disturbances. In some, it may be, the stomach is irritable and hypertonic, and secretes too much hydrochloric acid: such are prone to duodenal ulcer. Whereas in others the distal colon is irritable and hypertonic, and has its secretion disturbed: such are prone to colitis. In both of these examples the prime cause of disease is disordered function, and it is curious to note that the first is more common in men and the second in women.

But let such patients take comfort—strain on hollow viscera makes itself manifest and gives warning, and if disease shall follow, such disease is curable. Not so where strain is focussed upon the circulatory system. Here damage is often wrought in silence and even under cover of buoyant vigour, and may not disclose itself until health is irretrievably damaged by the effects of high blood pressure or degenerate arteries. Though I have not collected data to prove it, my own experience has been that colitis is more often associated with normal or low blood pressure than with high blood pressure.

Granted that disease is the interaction between a morbid process and the individual, it is clear that where the

individual and his life are primitive, disease is simpler and more constant in its manifestations; on the other hand, when the individual has become highly specialized and sensitive, where he is harassed by the stresses of life and perhaps torn by its struggles, the picture of disease is more complex and varied. Colitis is a striking example of this fact. Not only is colitis a product of modern life, but to a singular degree, in the final presentation of its symptoms and effects in any given patient, it is a composite picture of the physical, the mental, of temperament and character. And by colitis I mean so-called mucous colitis, and exclude all cases where mucus in the stools is associated with organic disease of the colon, such as new growth, and the various forms of ulcerative colitis.

Next, as to the term colitis: if the condition is primarily due to disordered function and inflammation is only an added and not a constant feature, and if the disturbance is not limited to the colon, it might be objected that colitis is a misleading name for the condition. No name, however, has been suggested to take its place, and for complex clinical conditions comprehensive titles are difficult to devise, and we often have to be content with convenient labels. Meanwhile, "colitis" has the advantages of usage, brevity, and therefore of convenience.

THE CLINICAL PICTURE OF COLITIS.

The colonic manifestations are abdominal discomfort or pain, disturbance of the function of the colon as shown by irregularity in its evacuation and alteration of its contents, including the expulsion of mucus, and sometimes of blood or sand.

By variation in their severity, by the ease with which they are provoked and the frequency of their occurrence, the foregoing features produce varying clinical pictures. Thus pain may be acute or paroxysmal, or dull and aching, or, again, there may be a constant sense of abdominal discomfort and misery. Tenderness may be local, general, or absent. Mucus may be passed in casts, as lumps or in stringy form. In some cases the disease comes on in attacks and at long intervals, and the patient is quite well between whiles; in other instances the intervals of immunity are short and even incomplete, and, it may be, to such an extent that the patient is chronically ill and liable to exacerbations of symptoms on the slightest provocation.

The descending colon will be felt to be tightly contracted, and sometimes in addition the caecum toneless and distended. Examination by the sigmoidoscope will not usually at this stage disclose signs of inflammation, which shows that inflammation is not a necessary part of the condition; and in some cases where the mucous membrane is red and swollen such appearances may be evanescent and give place to normal appearances after a short interval. Infection does, in some instances, contribute to the picture, just as it is liable to follow disturbances of function in the urinary and biliary tracts. Such infection may be related to tonsils, gums, stomach, or appendix.

The appendix is seldom the focus of infection; more often it shares an infective process on equal terms with the colon; hence the results of its removal for colitis are commonly disappointing.

Radiography shows the distal colon to be tonically contracted and irregularly segmented. Side by side with this may be disclosed varying degrees of delay—it may be in the caecum, colon, in the lower ileum, in the second part of the duodenum. Further there may be displacements of the hollow viscera, such as a prolapsed caecum and the familiar festooned transverse colon, or again, a movable ascending colon, hairpin bends, and kinks.

With our greater familiarity with x-ray appearances in all varieties of cases we know how commonly anatomical irregularities can exist with bowels that function normally. When we recall how coils of intestine kinked and tethered by old adhesions can exist, and acute bends of the bowel be produced experimentally, without causing stasis, we are led to conclude that, provided the musculature of the bowel is efficient, these anatomical irregularities need not count for much, and especially in those portions of the bowel where the contents are fluid. In specimens examined by Keith the lumen of the bowel was not encroached upon, and the coils above kinks were not hypertrophied. On the other hand, delay can exist without the presence of any anatomical abnormality.

* Colitis is used here to denote mucous colitis.

The holding up of the contents of the lower ileum by the ileo-colic sphincter is a part of normal digestion and hyper-tonicity of that sphincter will produce ileal stasis. In the same way tonic contractions of the descending colon will produce delay in the proximal colon. In short, the immediate cause of stasis lies in the intestinal wall. It is the musculature and its nerve innervation which count, and it is only seldom that anatomical irregularities play an important part.

The importance of this question is great because its rightful determination is necessary to sound treatment. It is of small benefit to perform ingenious operations to replace or fix viscera unless these anatomical variations are causing the symptoms which are in need of relief. That such variations do occasionally cause ill health is undoubted, but their mere existence in conjunction with symptoms difficult of explanation is no proof that they have a causal relation to these symptoms. It is interesting to note how such fixing operations live each its short day, and pass into comparative disuse.

THE INVOLVEMENT OF THE ALIMENTARY TRACT.

The colon is not the only part affected. There are commonly symptoms referable to other parts of the alimentary tract. Thus pain occurs in the epigastrium soon after food, or, again, two hours after eating and relieved by food, so that in making a diagnosis the possible presence of gastric or duodenal ulcer has to be passed under review. Cardiospasm, gastric distension, and flatulence may also be features, and the incidence of these symptoms bears relation to those more strictly belonging to the lower bowel. Thus the onset of the typical spasmodic contraction of the descending colon and increase in mucus will go hand in hand with gastro-duodenal symptoms.

Again, an acute attack will sometimes begin quite definitely in the upper alimentary tract. Such a patient may be tolerably well, when from a slight or unperceived cause there will be an unpleasant taste, a furred tongue, perhaps a red pharynx and epigastric pain, nausea, and distension. The onset of the attack is sometimes suggestive of "protein shock." Such a patient will know by experience that in a few hours his colon will be painful, his stools abnormal, containing perhaps much undigested food and mucus. In other words, the mucous colitis is the final expression of an attack which has swept along the alimentary tract. On such a patient I have had appendicostomy performed. The attacks continued afterwards, but if soon after the onset of the symptoms the patient washed out the colon through the opening the pain in the colon and the passing of mucus would be largely prevented. The washings consisted of undigested food, so the stomach and small intestine were clearly in fault.

Sometimes the order is reversed, and the colon manifestations are followed by gastric symptoms. A colonic dyspepsia is as much a reality as appendicular dyspepsia.

The foregoing observations—and I have notes of many such cases—point to the close inter-relationship of function that exists between the various parts of the alimentary tract. The latter is a finely balanced bit of mechanism—derange one part and the other parts suffer.

Colitis, then, is one phase of a disturbed digestion in which stomach, duodenum, intestine, pancreas may all play a part. Side by side with stress and strain which impair function we find foods and methods of feeding which at the same time overtax it. Whereas the conditions of modern life often require special care in the choice of food, in actual fact the food of the people is in many respects open to more criticism than in former days. The foods that have become popular are not always the best foods. White bread, margarine, the boiling of milk, and the freezing of meat, mean deprivation of those accessory factors which give living power to the food we eat. And vitamin deficiency means not only impaired metabolism, but appears moreover directly to damage digestive function itself. Infection no doubt at a later stage may play an important part, but only gets foothold because the resistance of the tissues has been lowered by damaged function.

The well-known features which the term "alimentary toxæmia" comprises—the sallow dirty complexion, the inelastic and pigmented skin, the "unclean" feeling of mouth and stomach, the dusky lips, the sad eye, the cold

extremities, the depressed physical vitality, and the oppressed mind—go far to give character to any given case of colitis.

The measure of toxæmia is variable—being sometimes almost wholly absent, and at other times dominating the picture. Its association with fibrositis and arthritis is well established.

THE OVER-RESPONSIVE ABDOMEN.

Consider now the patients themselves—observe the difference as to the sex-incidence. Some find females to preponderate largely (Hale-White 85 per cent., Hurst 83 per cent.); others do not (Douglas Wilson 57 per cent.). I rather think the number of males has been increasing in recent years, and, judging by the notes of my cases, I should conclude the percentage of women to be about 70 to 75. The feature which is noticeable with a large number of patients is the over-responsiveness of the abdomen to nerve impressions. They have "barometric abdomens." Fatigue, fear, anxiety, mental stress and strain manifest themselves in their hollow viscera. So do reflex disturbances. Women suffering from the disease often have pelvic disorders which aggravate the intestinal symptoms, and especially during menstruation. Or let these patients have cold extremities (and they often have poor peripheral circulation), especially when they are fatigued, or, again, let them eat when they are cold, and an attack of colitis may easily follow. So much is this the tendency that in dealing with these patients it is part of my routine directions to them never to eat with cold hands and feet, and when they are tired to keep their extremities warm. The effect will sometimes follow the cause with amazing quickness—such quickness as would not give time for any inflammation to develop. I suggest it is rather that reflex nerve disturbance or central nerve disturbance, acting on over-responsive hollow viscera, puts function out of action—certainly motor function, and probably secretory and excretory function also. The rhythm of the intestine becomes disturbed. It is the difference between the regular and the irregular heart, between perhaps normal muscular contraction and auricular fibrillation. Since each zone of the alimentary tract influences the efficiency of the zone below and perhaps above it, if one zone be disturbed the other zones suffer, and thus the orderly sequence of digestion is deranged. Given failure in the function of movement, in the function of secretion (internal and external), and the consequent irregularities of putrefaction and deranged absorption, and "colitis" receives a large measure of explanation.

This over-responsiveness of the abdomen varies in degree. With precautions learned of experience it may, ordinarily, cause little trouble, but should untoward circumstances like over-fatigue, anxiety, bad feeding, occur the colitis symptom-complex may result. But there are some people whose nervous system is cut so fine that the ordinary rough-and-tumble of life is too much for them, and thus are explained some of those examples of intestinal invalids who are never well, and in whom chronic ailing is only varied by recurrent phases of acute symptoms. Such patients are not "neurotic." To call them so is a misuse of the term; they may, on the contrary, be heroic, working and even smiling in spite of the load they have to carry. Whether they become neurotic will depend largely on the considerations set forth in the following paragraph.

THE CONSCIOUS ABDOMEN.

If a gastro-intestinal tract is constantly causing aches, pains and discomforts, it gets raised in consciousness, with the result that slighter and slighter disturbances and even its very doings produce impressions and discomforts instead of remaining unperceived. We thus get built on the basis of physical disease a superstructure of symptoms and distresses which flourish on themselves and tend to grow apace.

There is thus a liability of a *conscious* abdomen being added to a *responsive* abdomen, or in other words, of a *state of mind* being added to a *state of body*.

The degree to which this happens in large measure explains the many varieties and intensities of symptoms occurring in patients who suffer from colitis; and here come in the temperament and character and training of the patient. The buoyant, cheerful temperament with a sense of humour will come off better than the inelastic

and sombre temperament. A subject which is introspective and self-centred may be enslaved by the disease, whereas if the subject has the power of sympathetic interest in people and things, can control the mind, and has courage to work, he can, in spite of a colon which is a constant trial, live a tolerably useful life by keeping clear of the worst evils which accrue from the conscious abdomen.

The so-called "neurotic" group consists of those who have developed from their colitis the "conscious abdomen" and have introspective minds.

To be neurotic is no essential part of colitis, though it is small wonder that many of the patients become so. It remains, however, a secondary incident, not an essential feature of the disease. How damaging the "conscious abdomen" can become is illustrated by that well-known type of patient who becomes so analytical of the feelings, doings, and contents of his colon as gradually to abandon aught else and live for his lower bowel.

If I may be allowed to digress for a moment, this consideration of the "conscious abdomen" prompts me to suggest that the profession needs to take up in a large-minded spirit the question of psychical treatment. The patient with colitis who is in danger of being crushed by his illness is not helped by being dubbed "neurotic." Often his physician can help him most by explaining his symptoms, by discriminating between those which have a physical basis and those which are nervous superstructure, those which threaten health and those which only threaten comfort, and in this way restore his perspective. The truth is often more helpful than drugs. The patient's mind can be trained and helped to detach itself, to control what it contemplates, to temper rather than reinforce in consciousness the aches and ills of the body, and thus establish the benign rather than the vicious circle. Such guidance is often given to patients by doctors with the requisite insight and grip, but it is a question whether in this world of hurry more method and system are not needed for this treatment, and there is surely room for those who possess the requisite gifts (and they are rare gifts) to be suitably trained. It is a branch of therapeutics which needs the guidance and restraint of the medical profession. Without such guidance it gathers to itself vanities and pretences which obscure its truth and discredit its usefulness.

It will be interesting to inquire how far clinical facts and considerations fit in with physiological knowledge, and here I turn, in the first instance, to the suggestive researches of Professor Keith.

The myenteric plexus (Auerbach's) possesses special features. In addition to ganglion cells and a network of fine fibres, it contains intermediate cells (nodal tissue) which connect the processes of ganglion cells with muscle cells. The development of the myenteric plexus varies in different parts of the alimentary tract. Thus it is found in greater abundance in the pyloric region and the lesser curvature than in the body of the stomach; in greater abundance in the second part of the duodenum than in the first and third parts; and again, more richly in the distal half of the transverse colon and the descending colon than in the caecum and ascending colon. Further, there are localized concentrations of the nodal tissue—"nodal centres"—at the ileo-colic junction and at the pyloric and cardiac orifices of the stomach.

This nodal tissue has the power of initiating contractile movement. It is the pacemaker of the intestines. The gastro-intestinal tract has been found to be divided into zones—gastric, duodenal, jejuno-iliac, proximal colic, and distal colic. Each of these zones has its own rhythm determined by its own nodal tissue. Where one zone joins the next there is a check or resistance to the peristaltic waves, and where there is a sphincter—for example, at the pylorus or ileo-caecal valve—the check is complete and the peristaltic wave comes to a stop. The rhythm of one zone is closely connected with that of the zones below and above it. The myenteric plexus, in addition to initiating contractility, has also a conducting function, for through it efferent impulses along the vagi and sympathetic nerves are conveyed to the intestinal wall.

Professor Keith aptly compares the nervous mechanism of the alimentary tract to that of the heart. We are well acquainted with tachycardia, irregularity of rhythm, fibrillation, heart-block, and the responsiveness of heart action to extrinsic impulses. Why should not correspond-

ing irregularities occur in the alimentary tract? And if to disturbed motor function we add the supposition of disturbed secretion and the effect of both of these on the intestinal contents, I suggest the clinical phenomena of colitis receive a considerable measure of explanation.

Stasis, though not a necessary, is quite a common feature of colitis. The two conditions often present one and the same clinical picture, and in their pathological findings there is a close resemblance. They are variants of the same morbid state and the same case may be styled colitis by one observer and intestinal stasis by another.

ALIMENTARY TOXAEMIA.

Although the term alimentary toxæmia presents to our minds a definite clinical picture the mode of production of the condition is obscure.

We may reasonably suppose that a high content of waste products and a damaged intestinal wall are the conditions which favour the passage of toxic products. And these are the conditions which exist in the large intestine in colitis, and sometimes also in the lower ileum. Stasis is not a necessary factor, for in ulcerative conditions of the colon associated with diarrhoea alimentary toxæmia may be a marked feature. Again, strong purgatives, by irritating the intestinal wall, may aggravate rather than allay an existing toxæmia. In colitis there is a retention of contents in the recesses of the colon even when the bowels are open; the latter, in short, do not sweep clean. The degree of toxæmia would depend on the nature of the contents which the colon receives from the ileum, the length of stay of such contents in the colon, and the measure of weakness of the colon defences.*

But in cases of colitis and stasis the colon and ileum are not solely responsible for alimentary toxæmia; for the latter will sometimes persist after ileo-sigmoidostomy and colectomy. The two following cases illustrate this fact; both showed colitis, stasis, and toxæmia.

CASE A.

Radiographic examination before operation by Dr. Jordan.

Stomach: enlarged and dropped, emptied in four hours.

Duodenum: Definite delay with dilatation of second part.

Ileum: At the end of eight and a half hours the greater part of the bismuth was in the ileum. At the end of thirty-one hours most of the bismuth was in the ileum and only a small quantity in the ascending and transverse colon.

Colon: After forty-five hours the bismuth was evenly distributed throughout the ascending, transverse, and descending colon. After fifty-five hours the bismuth was in the sigmoid and rectum. After seventy hours evacuation.

There was thus a very definite ileal and colonic stasis. The patient was the picture of colitis and alimentary toxæmia.

The operation of ileo-sigmoidostomy was performed. The same patient was examined a year later (Dr. Jordan).

Stomach: Not enlarged but dropped; peristalsis active.

Duodenum: First part dilated; no delay into jejunum. Bismuth went freely through the small intestine and after seven hours the whole of it was in the rectum; after twenty-four hours, evacuation in one unaided motion. The short-circuit was effective. There was no ileal stasis. The operation was a technical success, yet alimentary toxæmia was still present.

The same patient was examined nine years after the operation.

Stomach, rather irritable, was empty after one and a half hours.

Small intestine: After one and a half hours the duodenum was empty and the bismuth massed in the small intestine.

Rectum: In seven and a half hours the bismuth was in the lower sigmoid and rectum, except for a small amount scattered in the colon.

Yet alimentary toxæmia was still a feature of the patient's ill health.

CASE B.

This was a case of ileal and colonic stasis, mucous colitis, and alimentary toxæmia. Colectomy was performed. Examination one year after operation.

Stomach: Large and dropped as before; peristalsis normal.

Duodenum: Regurgitation from third to second part.

Rectum: At the end of five hours nearly all the bismuth was in the rectum; at the end of twenty-five hours evacuation.

Thus technically the operation had been successful, but symptoms persisted.

Re-examination Four Years after Operation.—The stomach and duodenum were as before; after six hours the bismuth was in the terminal coils of ileum, and some of these were dilated. After twenty-four hours the bismuth was in the rectum and the

* Graham Brown has described an amine (p-hydroxy-phenyl-ethylamine) which is formed in the intestine under conditions of stasis by the putrefactive destruction of proteins through the action of anaerobic bacteria. This toxin is converted in the liver into p-hydroxy-phenylacetic acid, and as such can be found in the urine in cases of alimentary toxæmia. It acts on the sympathetic, producing hypertonus.

last 4 inches of ileum. Toxaemic symptoms persisted, so that at this later date the case was neither a clinical nor a technical success.

Thus, even when the damaged colon is put out of harm's way and prompt evacuation is secured, toxæmia may persist. This means there is a second line of defence—namely, the liver, and that this line may also fail.

The colon and liver would thus seem to have a joint responsibility. In some cases the colon defences may have failed so badly that the flood of toxic products is more than even a normal liver can cope with. Given such circumstances, colectomy should succeed. In other instances the liver has a substantial share of responsibility, and then the results of colectomy will be clinically disappointing, even if technically successful.

It is known that in health during two hours after digestion of a mixed meal unaltered proteins, as well as peptones and amines, pass from the intestine into the portal vein, and that such foreign proteins do not pass the liver defences. If, however, the liver defences are insufficient, such products get through. Is it not likely that the same happens in toxæmia?

In abdominal migraine there is a marked toxæmia which is best explained by supposing that the liver defences are temporarily out of action, and Vidal, Abrami, Brissaud and other writers set forth reasons for supposing that migraine is the result of anaphylactic shock. A study of the familiar condition loosely called "chill on the liver" shows a close similarity to the symptoms sometimes produced by a second injection of a horse serum—namely, fever, headache, generalized pains, aching joints, anorexia, nausea, vomiting, etc. Is it not possible that certain attacks of colitis which sometimes light up quickly and without apparent cause may have an anaphylactic origin?

The following case is worth mentioning in this connexion. A patient liable to colitis always has cold reddish hands; at times her hands become blue, and patches resembling angioneurotic oedema rapidly appear on them. This is usually, in the patient's experience, an immediate precursor of an attack of colitis.

This reminds one of the anaphylactic origin of asthma, between which and colitis, as Hurst has pointed out, there are many suggestive parallels—the over-responsiveness of the patient, the spasmodic contraction, the excess of mucus, the liability of an inflammatory factor to supervene in the shape of bronchitis. In its late stages the lung of the asthmatic is inelastic and undergoes atrophic and fibrotic changes similar to those found in the colon in the later stages of colitis.

TREATMENT.

Owing to the complexity of its origin and the variety of its manifestations, mucous colitis is difficult to treat. The coarse food rich in cellulose advocated by Van Noorden is not a success. It irritates the intestine, and is prone to produce gas.

The food should consist of light solids—for example, white fish, first cooked meats, dishes made with eggs, light puddings, etc. Soups should be taken sparingly or avoided. Only a little fluid should be taken with the meals, but sufficient between meals. Fruit and vegetables are a problem; they are often difficult to digest, yet from the point of view of nutrition desirable; mashed potato, cauliflower, and cooked celery and lettuce agree, and of fruits apple is the safest.

In intractable cases the limitation of vegetables and fruit has often to be strict and by some authorities a paste (macaroni) diet is prescribed for a period. The disadvantage of a too restricted diet is twofold—it discourages the patient and is apt to result in an insufficiency of essential foodstuffs and vitamins. The latter may be given separately where foods containing them cannot be tolerated in adequate quantity. Sometimes fruit and even raw vegetable like lettuce can be tolerated if taken alone, whereas they remain undigested if mixed with other food. And, generally, colitis patients do better by taking only two main articles of food (courses) at a meal.

It is important for the extremities to be warm, and especially before eating.

If the body or mind has been engaged in effort, a few moments of repose and relaxation should precede the taking of food. It will often be found that these patients

cannot take vigorous exercise of both body and mind on the same day. A business man is often better with only gentle exercise during the week, reserving his physical exertion for the week-end. Where the patient's abdomen is over-responsive the treatment advised should have regard to that fact. Fatigue, stress, and anxiety must be guarded against where possible. Periodic rests, such as a weekly or fortnightly day in bed, helps to secure this end.

A great deal can be done by educating the mind not only to concentrate but to detach and relax quickly. This is an important aspect of treatment. Physical culture holds an established position. Surely psychical culture is of like importance. The power to rest quickly and relax deliberately is essential to those who feel acutely and work strenuously.

Drugs that aid digestion, like takadiastase and pancreatin, do good. Sleep is apt to be disturbed by distensions of the hollow viscera. Bismuth and sodium bicarbonate with carminative, and if necessary a few minims of nepenthe, given at bedtime will help this condition.

Aperients should be gentle, and for clearing the bowel castor oil is the best. Very often little aperient is needed if paraffin is taken regularly, though there are patients in whom paraffin is ejected alone and even incontinently. Special care in the use of aperients is needed when bacilluria exists.

An essential indication is to secure the emptying and cleanness of the colon. This is secured by intestinal lavage. Bismuth in bulk (3ij) administered in bread and milk or jelly taken every week or ten days is often of benefit. It seems to act by scouring the colon. Where there is much fermentation an ounce of wood charcoal may be mixed with the bismuth. Intestinal antiseptics are disappointing.

Where the above measures fail to secure evacuation and cleansing of the intestine, appendicostomy is a sound and safe procedure, and is often productive of considerable benefit.

Colectomy.

Sufficient experience has now been gained to pass the operation of colectomy under review.

The results as a whole have not been encouraging. Apart from its magnitude and therefore risk, the operation seldom restores to a patient anything approaching a normal life. Patients will express doubts as to whether they have gained enough to have made the operation worth while.

As the cases quoted above show, technical and clinical success do not always go together. Further, there are a few instances where the operation completely fails in its objects and leaves the patient as wrecked, if not more wrecked, in health than before.

Now and again the results are excellent and succeed where previous measures have failed. I have under observation a case in which a transformation was effected by colectomy, and now, after ten years, the patient continues in good health.

The indications for colectomy would seem to be:

1. Where the motility of the colon is so spent that all other measures fail to prevent stasis within it.
2. Where the colon is so damaged in its defences that, in spite of every effort to keep it cleansed, toxic products get through in such abundance as to ruin the health of the patient. But here, too, there is risk that the second line of defence in the liver may be damaged also.

Hemicolectomy.

Hemicolectomy is on a different footing. The operative risk is small, and if it fails in its object there is little risk of the patient's condition being worsened. If the failure of function is in the proximal colon the prospect of success should be good, especially if the ileo-colic valve is preserved in the implanted portion, as has recently been done. Unfortunately, however, there is sometimes too much mischief in the distal colon for the operation to be adequate. When such is the case and a complete colectomy appears to be inevitable, I suggest that it is worth while considering in each case whether colotomy would not be efficient and preferable. The thought of colotomy is, no doubt, in discord with a fine surgical sense, and its performance carries a feeling of disappointment to the surgeon that circumstances do not permit him to do something better. But in relation to this particular problem it has advantages.

It is a simple operation, patients achieve a considerable accommodation to its inconveniences, and, if it fails, further surgical procedures are not precluded.

On the other hand, complete colectomy is the last and irretrievable word; it offers but a modest prospect of success, and its failures, not a few in number, are sometimes apt to be such dire failures as to mean for the patients misery and suffering little capable of alleviation.

ACUTE INFECTIONS OF THE ENDOMETRIUM.*

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MEDICAL SUPERINTENDENT OF THE KENSINGTON INFIRMARY.

It has hitherto been generally held that those cases of endometritis which give rise to marked constitutional disturbance, where there is often a feeling of chilliness, or even a rigor, the temperature and pulse are raised, the uterus is tender, soft, and boggy, with or without a tubal infection, should be left strictly alone. The treatment in these cases is described as "expectant" or "conservative," but surely, if those symptoms and signs were present in any other part of the body, the call would be for active treatment and not conservative. In such case, where there is pent-up secretion of a septic character, the first principles of surgery would be applied, the abscess opened and drained; but because it is the uterus, the patients are permitted to drag out days, if not weeks, of pain and discomfort, whereas experience shows that by disinfecting the endometrium and draining the uterus, the symptoms and signs can be effectively relieved. In these cases the cervix is septic and oedematous, the mucous membrane lining the canal is swollen and heaped up, the canal tortuous, which prevent any dilatation by surgical instruments. Any attempt at such would injure the cervix, whereas a small catheter, well lubricated, can always be introduced into the uterine cavity without causing injury, the interior of the cavity disinfected, and a way made for drainage.

I have now had considerable experience in the treatment of acute septic infections of the uterus and its adnexa, and be the infection streptococcal or gonococcal, or be it of a septicaemic character, I have rarely failed to relieve those acute symptoms and signs by dealing with the nidus of infection, which is in the endometrium. The results obtained prove to me that these acute conditions call for active and not expectant treatment. The lack of active treatment is liable to lead to the spread of infection from the uterus to the Fallopian tubes, to the pelvic peritoneum, and even to the general blood stream. At the same time it should be carefully borne in mind that it is very easy to increase the inflammation by opening up fresh channels in treating these acute conditions of the endometrium. Experience has shown me that any attempt at dilatation of the cervical canal and swabbing the uterine cavity is only inviting trouble, and, moreover, gonococcal infection cannot be eradicated at one treatment.

These cases must be approached with all the caution that one would employ in opening an abdomen. In performing the operation described below the following points must be insisted upon: All acute cases must be operated on immediately; the structures below the cervix must be carefully cleaned and made aseptic from below upwards; no attempt should be made to catch hold of or pull on the cervix with a volsellum, nor to dilate the cervical canal; and finally, the uterus should be rid of any residual fluid after syringing, and a tube left in for drainage.

Treatment for Gonorrhoeal Endometritis.

1. Three days before operation the vulval parts and vagina must be swabbed out with ether soap and water and saline solution; the bladder irrigated with potassium permanganate, 1 in 5,000; then glycerin 7 parts and iodine (1 in 10) 1 part applied to the vagina. All cases with pyrexia are, of course, operated on at once.

2. The operation must be performed under an anaesthetic, the patient being placed in the lithotomy position.

3. The external parts and vagina are washed out with ether soap and water and saline. The urethra, vagina, and any ducts that can be observed are swabbed out with the solution of iodine and glycerin.

* Extracts from a lecture delivered to the Association of the Inspectors of Midwives at the Annual Conference in May, 1921.

4. A Sims's speculum is introduced into the posterior fornix, then a sponge forceps holding a swab is inserted into the anterior fornix and the cervix manipulated into a central position. A No. 4, 5, or 6 india-rubber terminal-eyed catheter is lubricated with glycerin and passed through the cervix to the upper part of the uterus; this is best done by a special introducer (made for me by J. H. Montague, New Bond Street). Ten c.cm. of a solution of iodine (1 in 10) 7 parts and glycerin 1 part are gently syringed into the uterus. The syringe is lowered and any remaining fluid is sucked out. This is again repeated and the vagina swabbed dry.

5. A soft catheter is then introduced to the fundus of the uterus, the end coiled up in the vagina, and a large swab placed just inside the vulva to prevent the catheter coming out. The swab and catheter are removed in six hours.

6. The patient is kept in bed in the semi-Fowler position and takes plenty of hot water as soon as she is round from the anaesthetic. On the third day the whole of the vagina is swabbed out and left dry. The external parts are kept scrupulously clean. The patient is kept in bed for a week.

7. The treatment is repeated in from two to three weeks, and it generally requires to be done from two to six times.

8. No other treatment is required between the operations.

Results of Treatment.

The results are illustrated by the following cases:

CASE I.

M., aged 25, admitted April 10th, 1921. Patient was sent to the infirmary, having been diagnosed by her own doctor as suffering from acute appendicitis. She gave a history of sudden pain in the stomach and right lower abdomen coming on two weeks previously, which had continued ever since. She often felt sick but did not vomit, had burning pain on micturition, and vaginal discharge. She looked and felt thoroughly ill. The temperature on admission was 101°, pulse 118.

Abdominal Examination.—Semi-fluctuant swelling extending from the right pelvis to within two fingerbreadths of umbilicus, and within one fingerbreadth of the right anterior superior spine. *Per vaginam:* There was marked vaginal discharge; erosion of cervix; uterus enlarged, with impaired mobility in an upward direction. After being prepared she was taken to the theatre and anaesthetized; the lump then felt the size of a large fist. The uterus was syringed out with 10 c.cm. of solution of iodine (1 in 10) 7 parts, and glycerin 1 part. A small india-rubber catheter was left in for six hours and then removed.

The following morning the temperature was 100°, pulse 94; slept well. Slight pains only. Evening temperature normal, pulse 92. On April 12th the temperature and pulse were normal; slight pain only in lump, described as prickly in character. The next day she felt quite well, and on the 14th all pain had gone.

On April 20th examination *per vaginam* showed that the lump had decreased enormously; it was then only the size of a walnut. On this and the two following days the vagina was swabbed with glycerin 7 parts, iodine 1 part. On the 23rd she was anaesthetized and the uterus syringed out with iodine 7 parts, glycerin 1 part; a tube was inserted and removed in six hours. She afterwards slept well, and there was no constitutional disturbance.

On vaginal examination on May 3rd the uterus was freely movable. The swelling in the right lateral fornix was reduced to the size of a thickened cord. The patient was discharged on May 9th.

CASE II.

Y., aged 24, admitted March 5th, 1921. Sent in as acute appendicitis. Complained of pain in abdomen, chiefly on right side and below the umbilicus, which came on two days previously quite suddenly. Vomited several times before admission.

Condition on Admission: Lump felt on right side above inner half of Poupart's ligament. Some tenderness around umbilicus and over McBurney's point. *Per vaginam:* Some yellow discharge, tender swelling in right lateral fornix. Temperature 100°, pulse 102. Taken to theatre, given anaesthetic and uterus syringed out with iodine 7 parts, glycerin 1 part. On examination under anaesthetic the lump was found to be an enlarged Fallopian tube the size of a large orange. Uterus enlarged, erosion of cervix.

On March 6th the morning temperature was 99.4°, pulse 96. Pain was still present, though much less. The evening temperature was 100.8°, pulse 96. The following day both temperature and pulse were normal; there was complete absence of pain and discomfort.

On March 17th, eleven days after operation, the temperature went up to 99°, pulse 112. Pain and discomfort again appeared. She was taken to the theatre, given an anaesthetic, and the uterus was syringed out. The temperature immediately came down to normal, pulse to 84. The lump was now the size of a Tangerine orange, just palpable above the pubis; not tender.

From March 21st to 28th swabbing only was done; on the 31st the uterus was syringed out and drained for six hours.

On April 4th the vagina was again swabbed; tube hard, the size of a thickened cord.

The patient was discharged cured on April 9th. A month later the uterus was firm and the erosion of cervix entirely healed.