the aura, and is said to work by virtue of constricting the unduly lax and therefore painful blood vessel. The essence of its use is that it should be given as early in the attack as possible and preferably during the prodrome or at least the stage of the aura. A dose of 2 mg. is taken initially by allowing it to dissolve under the tongue and this dose may be repeated in an hour or more if necessary. Perhaps more effective is a subcutaneous injection of a $\frac{1}{2}$ mg., best given by the patient himself, of course, and reserved for the few whose attacks are tending to interfere with their professional lives. This, too, may be repeated. Ergotamine may also be used prophylactically but it is contraindicated in pregnancy or with advanced arterio-sclerosis. It is not without unwanted side effects, particularly nausea, and this may interfere with an otherwise excellent therapeutic result. Dihydroergotamine is said to have fewer toxic effects with an equal therapeutic one and may be given parenterally in doses of 1 to 2 mg. It would not be useful to make a list of all the analgesic drugs that have been used for the relief of the headache of migraine. Probably the most effective is codeine phosphate in $\frac{1}{2}$ to 2 gr. doses or mixtures containing it, but of course individual preferences may dictate the use of other drugs.

It is seldom that continued sedation, analgesic drugs or ergotamine tartrate (femergin) either separately or in one or other combination, fail to produce a good effect. Several pages could be given over to a discussion of the relative merits of a hundred treatments for migraine. This alone should convince the doctor that not one of them is the specific for all his patients. As with many other disorders, particularly functional ones, it is hard not to believe that some of the suggested treatments are merely vehicles for an infectious enthusiasm. Which ever method is used, however, there is no alternative to a reassuring discussion with the patient, an explanation of his complaint and an attempt made to reorientate him to the troubles that he may have. It is a mistake to hurry to vasoconstrictor drugs without at first trying simpler remedies and especially those that reach further back than the immediate 'mechanical' cause. Time taken at the first interview, possibly ill-afforded, will repay itself a hundredfold in the future.

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THE PRESENT POSITION IN THE TREATMENT OF CHRONIC ULCERATIVE COLITIS

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Chronic ulcerative colitis has been talked about more in recent years than ever before. It is best qualified by adding the term 'non-specific' as in this way the dysenteries are definitely ruled out. It is of the greatest importance to do this as amoebic dysentery can easily simulate this disease. Although the dysenteries are of rare occurrence in this country, patients did present themselves after the war years as a result of service in the East.

The disease is a serious one and unfortunately the cause is still unknown. It is serious because when once a patient is a victim he never seems to recover completely. On the other hand, a high proportion can continue to live without severe handicap on medical treatment alone and this may

have to be resorted to only at intervals. This emphasizes the characteristic nature of the disease in that it is very liable to intermissions and there may be quite long periods of remission of symptoms. The number of cases that call for surgical treatment is probably not more than 25 per cent. When this form of treatment is undertaken it always means an ileostomy—temporary or permanent. Looking back on the other forms of surgical treatment, appendicostomy was very popular. It was a minor operation and allowed the application of medication to the colon, which was thought to be of value. Sir Arthur Hurst showed, however, that if one were to rely upon the introduction of antiseptics and astringents they could

be applied to the colon just as well through the rectum as via the appendix stump through a tube. Later it was felt that absolute rest to the colon was the only way to improve the condition of the colon, so ileostomy became the operation of choice.

Now we have reached a further stage when it is thought wiser to remove the diseased colon in addition to an ileostomy, not only to avoid complications of the disease but also to guard against the danger of malignant disease becoming superimposed.

To go back to aetiological factors it is a disease which can attack an individual at any age. The acute forms are seen more in early life whereas the mature adult shows a more chronic form. Generally speaking chronic ulcerative colitis is a disease of adult life; acute ulcerative colitis of adolescence and early adult life.

Causation

No advance has been made in the causation factor. Bacterin's bacillus has been discredited as this organism is found in normal colons without any manifestation of the disease. A toxin is a popular belief but the source of toxin is not known. No specific infection can be found to cause the disease although it may be that as a result of acute inflammation, a lymphoedema and a subsequent lymphoid hyperplasia, as suggested by Hadfield in Crohn's Disease may be an underlying factor. Following along these lines were the suggestions of Portis (1949) who reported an increase in an enzyme—lysozyme—in patients suffering from this disease. This enzyme has the power to digest the protective layer of mucus in the colon and so make it more vulnerable to attack. The source of this enzyme is stated to be the pus cells and we find that the discharge from the bowel in these cases does contain pus as well as blood and mucus. Estimations of this substance have been carried out in patients with the disease, but it has not been proved that it is of great importance in assessing the severity of the disease.

Other factors that have been referred to are allergy, vitamin deficiency and emotional disturbance. The psychosomatic features of the disease were established by Wittkower and Cullinan, but it is difficult to believe that the initial ulceration can be brought about in this way. It would be easier to believe that it might influence the perpetuation of the disease.

Diagnosis

The diagnosis of this disease is not easy to arrive at in the early stages. The patient usually presents with severe diarrhoea which may be quite sudden in onset—it comes on for no apparent reason although some article of food is usually

blamed for it. In the less severe cases they do not report to their doctors until a definite proctitis has developed, the patient having become tolerant of the diarrhoea. The typical case spreads from the rectum to involve the colon. Unfortunately, all cases are not typical and the patient may present with a history of loose motions for years and not until he gets a fissure or perianal suppuration does he report to his doctor. In between these two extremes there is the case which presents as a low grade obstruction, and it is found on investigation that a portion only of the colon is involved, causing stenosis. This is in the nature of a regional colitis like Crohn's Disease. The typical Crohn's Disease attacking the distal part of the ileum may show extension into the right side of the colon. The characteristic symptoms of involvement of the terminal ileum is diarrhoea so that Crohn's Disease must be thought of as an alternative to rather than concomitant with chronic ulcerative colitis in the early diagnosis. There are, however, numerous reports of cases showing the two conditions and it is quite possible that they are closely allied to one another.

In establishing an accurate diagnosis there are three special investigations which should be carried out:

1. Bacteriological examination of the stools. This is necessary in order to exclude any specific forms of colitis such as amoebic dysentery, to which reference has already been made. The presence of pus cells should be confirmed by using a small scoop through a proctoscope, to obtain the specimen of bowel content for bacteriological examination.

2. Sigmoidoscopy. This is essential to confirm the presence of ulceration—past or present—and also to view the mucous wall of the rectum, noting the red granular appearance with its tendency to bleed easily. Inflation of the bowel should be avoided in the use of the instrument, owing to the danger of rupture of the diseased wall. The presence of stricture formation is important to note, as if present low down it will preclude the use of the rectum if a return to rectal control is anticipated. Also, a stricture will strongly suggest the possibility of development of carcinoma in addition to perirectal inflammation. The presence or absence of polypi must also be noted at this examination. These may only be pseudo-polypi of an inflammatory nature resulting from the survival of areas of mucosa between the areas of ulceration. Cuthbert Dukes has referred to different types of polypi—*inflammatory* and *adenomatous*. The former is the type already referred to while the latter is rarely seen in chronic ulcerative colitis but is well shown to be a precancerous phase in familial polyposis. Carcinoma in chronic ulcerative colitis appears to

arise in the areas of ulceration in between the pseudo-polypi from his observations.

3. X-ray examination. This should take the form of a barium enema and must always be done if considered safe. It is remarkable how often a physician overlooks this investigation when treating a patient with persistent diarrhoea, but this is no doubt due to his fear of producing a perforation. I reported a case two years ago of a man of 31 who had undergone treatment for recurrent diarrhoea for two years and no X-rays had been taken. A barium enema revealed an extensive involvement of the colon. Following an ileostomy he developed a pulmonary embolism and died. At post mortem it was found that the whole colon was diseased and pseudo-polyposis was present throughout. The investigation gives added information as to the extent of involvement of the colon. It is also a great help in determining the type of surgical procedure to adopt. The loss of haustrations alone is not necessarily an indication of bowel wall damage as it can return after a period of medical treatment as was shown by Hurst. He attributed this reversible change to an involvement of the muscularis mucosae without destruction, hence the possibility of recovery. Irreversible changes take place only when there is a replacement of fibrous tissue in the muscular coat and is illustrated by a permanent deformity, giving the appearance of a rigid tube.

Complications of the Disease

These may be very serious for the individual and usually are associated with the chronic type. Considering the colon as a whole they take the form of pericolic abscesses, severe haemorrhages, perforation and carcinoma. With reference to perforation, this might be insidious and even multiple and present as a localized intraperitoneal abscess. All these are very serious and will be referred to again under 'surgical treatment.' With regard to carcinoma, evidence is accumulating both from the observations of Dukes's pathological studies from material chiefly derived from St. Mark's Hospital and from reports from American workers, that the number of patients developing this complication is greater than was originally thought. Ten years ago it was stated that about 3 per cent. of cases developed carcinoma in the diseased colon or rectum. Now Cattell (1948) has found that one in three cases developed carcinoma if the disease had been present for nine years or more. Dukes (1952) showed that there was a total incidence of 11.1 per cent. but pointed out that in those cases of more than ten years' duration the incidence went up to nearly 50 per cent.

Considering the rectum and anal canal only

ischio-rectal abscesses—fistulae and fissures—and stenosis often occur.

A general condition not recognized until recent years as being associated with chronic ulcerative colitis is pyoderma and ulceration of the leg. These can be very severe with crippling complications and calls for radical surgical measures on the colon to get them under control. In one case after numerous skin grafts and lumbar sympathectomy the patient was submitted to a subtotal colectomy which healed the ulceration of the leg. This usually is a cure and it is difficult to explain. It is now well recognized as a complication of the disease. Another general condition is arthritis, which often takes the form of sub-acute synovitis of joints such as the knee, shoulder and elbow and usually clears up in the course of treatment of the disease as a whole. In some instances extreme fatty changes occur in the liver, which may proceed to cirrhosis. Such patients show gross hypoproteinaemia and it may be that the lesser degree of this which we see so frequently may be the result of a lesser degree of liver change. This must always be borne in mind as it renders operative procedures hazardous. Extreme sensitivity of the skin and even general exfoliative dermatitis and intermittent hydroarthroses may occur as a result of medication, infusion or transfusion.

Treatment

In all cases it is of the greatest importance to have the closest co-operation between physician and surgeon. Medical treatment must always be considered first. The difficulty is when to make the decision to submit the patient to surgical treatment. There should be no doubt as to the form of surgical treatment when once agreed upon—it is always an ileostomy, which may be permanent. Knowing this, one has to adapt the patient's mind to the idea of a change in his habits which will result after having undergone the operation. Great help is obtained by contact with a patient who has already undergone a similar operation. It gives confidence and makes the patient realize that the handicap is not so great as anticipated.

Medical treatment first aims at getting the confidence of the patient. The diarrhoea has to be controlled and it is quite wrong to think that the food should be limited in amount and that it should only consist of milky foods. A liberal mixed diet must be maintained. Vitamin supplements should be given—especially the B complex and vitamin C. Additional proteins should be encouraged though the value of artificial protein supplements is dubious. The use of opium may be required to control the diarrhoea though codeine alone is preferable if the condition is not sufficiently severe. A recent drug—methanthelinium bro-

mide—is a great help in the relief of hypermobility and spasm of the small gut. The ganglion blocking action of this drug greatly reduces the intestinal movement and tone. The drying of the mouth and the blurring of vision may prove a great handicap. A constant watch must be kept on the blood pressure and the urinary bladder, and care must be taken not to induce a paralytic ileus. Taken by mouth it is frequently ineffective and repeated injections are troublesome.

The disease is always associated with anaemia so blood transfusions are found to be of the greatest value—in fact I should say that it is the outstanding form of medical treatment. Iron administration by mouth is both difficult and often intolerable though intravenous iron therapy may be useful. Antibiotics have been given a trial but they are found to be disappointing. They undoubtedly are of value in reducing the secondary infection in the bowel but they do not get at the root of the trouble. It must be remembered, too, that by cutting down the organism in the colon there is a diminution in the formation of vitamins and these must be replaced. An infective enterocolitis may be superimposed by organisms resistant to antibiotics—especially the staphylococcus. The infection in these circumstances may induce septicaemia and in the absence of a suitable specific therapy may prove fatal. In the acute case there will be a deficiency of chlorides and proteins and possibly potassium. This calls for intravenous therapy and the use of a Hartmann's solution is of greater value than saline alone.

A failure to respond to this form of treatment will call for surgical intervention. It was once thought that an early ileostomy would prevent irreversible changes taking place in the colon and may result in a return to a normal bowel. This is not considered to be a likely course nowadays, and mounting evidence of carcinoma developing as a complication of this disease, already referred to, has put out of our heads the idea of restoring the colonic function after an ileostomy.

Ileostomy is undoubtedly the operation of choice, and it has proved the greatest advance in the treatment of this disease. There are various forms it can take such as single barrelled or double barrelled, and if the latter the separation of the two openings is essential.

The position of the artificial anus in relation to the bag or box to be used subsequently is of the greatest importance to the patient. The main point to remember is that the opening must be well away from the antero-superior spine to allow a comfortable and safe flange to fit round the stoma without leakage.

After its formation there are various complications that arise. The commonest of these are sub-

acute obstruction, especially in the early days of its formation. Prolapse or retraction of the ileostomy also occurs. There is no certain way of preventing prolapse but the fixation of the mesenteric edge of the projecting ileum to the anterior and lateral abdominal wall of the abdomen will help and should always be carried out. A tendency to stenosis must be avoided as this will encourage not only prolapse but also obstruction. If there is any tendency to stenosis, routine dilation of the stoma with a bougie is of value. More important, I think, is the tendency of the musculature of the abdominal wall to constrict the segment of ileum brought through, as in the early stages the bowel wall is very collapsible. It is only later that the ileum hypertrophies and is able to overcome the resistance of the abdominal wall. This seems to me to offer an alternative explanation.

Some surgeons remove a circle of skin based on the idea of Ernest Miles, when forming an iliac colostomy to avoid constriction of the artificial anus by scar tissue. Intestinal obstruction can be very serious in the post-operative period. The use of a whistle tipped catheter, passed through the ileostomy will generally give relief and this manoeuvre may have to be repeated in the first month or so. It tends to subside and may be the result of a gradual increasing hypertrophy of the intestinal wall already referred to. Other factors may be an upset in the blood chemistry or vitamin deficiency. A recent case was explored after the introduction of the tube had failed to find relief; no obstruction was found, but as a result of a plasma drip the bowel started to work within 12 hours of the closure of the abdomen. True mechanical obstructions do occur but this is usually after more extensive operations such as colectomy where adhesions are more prone to develop. On account of this I am in favour of establishing an ileostomy in the simplest possible way and without any exploration at all in the initial stage in the majority of cases. A terminal ileostomy through a small incision just to the lateral edge of the rectus sheath, dividing the ileum about 4 in. away from the ileo-caecal valve is most satisfactory. The distal end of the divided ileum can be closed and dropped back into the peritoneal cavity with absolute safety, provided there is no stricture formation in colon or rectum to prevent drainage of the disfunctioned portion of gut through the anus. If the conditions are such that the distal end must be left open on the surface of the abdomen, as arises when stricture formation is present in colon or rectum, two openings must be formed and these must be separated for convenience of management. If they are kept together as would result in a double-barrelled ileostomy in continuity, the patient is in constant trouble with

excoriation of the skin as no satisfactory bag or box can be fitted. The protection of the skin is of the greatest importance. Reliance cannot be made on any form of paint or ointment. Immediately the ileostomy is made, closed drainage must be established by means of a tube leading from the lumen to the container under the bed. When this comes out a temporary box with large bag or a large-sized bag fixed directly over the stoma must be fitted. A large bag is essential in the early stages as the discharge is fluid and of great amount—later it becomes more solid. Some patients cannot tolerate fixation of the flange of the bag to the skin as recommended in the Rutzen bag and copied in this country by Salts. Quite adequate covers with bag attachments can be obtained which do not have to be stuck down provided care is taken that the neck of the ileostomy is well protected. These bags are made by Donald Rose and Down Bros. If a covering for skin round the ileostomy is used tulle gras in the early stages, followed by aluminium paste or Siccolan ointment, are of the greatest value, in my experience.

Colectomy

This has always been thought to be necessary when complications of the disease have occurred. Also, in view of the growing knowledge that a colon affected by this disease will very likely become carcinomatous, especially after a period of ten years or so, colectomy is being considered and carried out with increasing frequency.

In very severe cases an ileostomy does not always save the patient's life and the chances may be greater if removal of the colon is carried out at the same time. In the majority of cases it does not seem necessary to submit the patient to this procedure initially as it would raise the mortality rate of the operation. After a preliminary ileostomy a subsequent colectomy is not a difficult or dangerous operation and is attended with very little or no mortality. Another advantage of carrying out the treatment in stages is that you can observe whether there is any improvement taking place in the disfunctioned colon. If you wish to consider a

return to rectal control, retention enemata of sulphasuccidine can be given which may bring about a marked improvement in the rectum.

When colectomy is mentioned it is usually more correct to refer to it as a subtotal colectomy. The remains of the ileum, the caecum, ascending, transverse and descending colon are all removed, and a division is made in the lower sigmoid. The distal end of sigmoid is then either brought out on to the surface or closed off and buried under the peritoneum in the pelvis. If the rectum appears good enough to leave then an approximation to the terminal loop of ileum can be made in anticipation of a return to rectal control.

Removal of the Rectum

Following the subtotal colectomy the rectum is either retained or subsequently removed. Removal is essential when perianal suppuration has occurred or stenosis is present, as this is very likely to be associated with carcinomatous change. On the other hand, if it has not been seriously affected, and in some cases this is so in my experience, then it can be retained and an ileo-rectal anastomosis made.

I have recently referred to a small series of 15 cases found suitable for this method at a discussion at the Royal Society of Medicine in May 1953. After a period of observation varying from six months to four years, eight of the twelve appear to be very satisfactory and the patients are very grateful. It is possible, however, that complications will occur in the remaining portion of bowel and that an abdomino-perineal excision will have to be carried out later with return to a permanent ileostomy. There seems justification in continuing to do this in selected cases from the above experimental series.

Acknowledgment

I would like to acknowledge the help given to me by Dr. Scowen, and his co-operation in the medical treatment of patients suffering from this disease.

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