A Lecture ON CHRONIC DIARRHOEA IN THE ADULT.

DELIVERED AT THE MEDICAL GRADUATES' COLLEGE
AND POLYCLINIC.

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It is important to realize at the outset that diarrhoea is a symptom and not a disease in itself, and that if it is to be treated properly one must spare no pains to discover the nature and site of the disorder in the alimentary canal which is causing it. The routine prescription of an astringent mixture for every patient who complains of diarrhoea of some standing is particularly to be avoided.

In describing the chief varieties of chronic diarrhoea met with in practice it is necessary to adopt some form of classification. Our knowledge, however, is not yet sufficient to make any perfectly logical classification possible, and I propose, therefore, to group the chief varieties partly according to the site of the disorder to which the diarrhoea owes its origin, and partly according to the nature of the disturbance which exists. For clinical purposes this is, I think, the most satisfactory plan.

1. GASTROGENIC DIARRHOEA.

By gastrogenic diarrhoea one means a looseness of the bowels which is due to imperfect digestion in the stomach. It is by no means an uncommon variety, although it is not yet so well recognized as it ought to be. The defect in gastric digestion is due to an insufficient secretion of gastric juice, sometimes amounting to complete achylia. How this leads to diarrhoea is disputed, but it may either be that the absence of hydrochloric acid, which is the natural antiseptic of the alimentary canal, favours putrefactive and fermentative processes, or that the imperfectly dissolved food which leaves the stomach sets up irritation of the small intestine mechanically. The diarrhoea in these cases may last for years, although it often intermits for periods varying from weeks to months, but there is nothing characteristic about it. Nor, surprising though it may seem, is there necessarily any complaint of the ordinary symptoms of indigestion, although the appetite is usually impaired, especially—and this is rather suggestive—for meat. The diagnosis can therefore only be made by the use of the stomach tube after a test meal. It will then be found that little or no gastric contents can be obtained, and that the small quantity which comes away is very imperfectly digested, and shows but little acidity and no free HCl. The following is an illustrative case:

Mrs. D., aged 54, had suffered from almost constant diarrhoea for nine years. Her motions numbered from two to six daily and were watery in character, but contained no mucus or blood. She had always regarded her digestion as "quite good," but had "never been able to eat meat." Lately she had failed considerably in flesh and strength. Physical examination by the ordinary methods revealed nothing abnormal, but a test breakfast yielded a very small result, with a total acidity of only 5 and no free HCl.

Under treatment with hydrochloric acid and pepsine combined with a modified diet, she quickly lost her diarrhoea and gained a stone in weight in five months. She is now (six months after treatment was begun) in better health than she has enjoyed for years.

The treatment of gastrogenic diarrhoea is both simple and satisfactory. The principles of diet to be observed are to give all foods in a finely divided form, so that they will pass readily out of the stomach, and to reduce the amount of meat in the diet to a low level. Dilute hydrochloric acid should be given about half an hour after each meal in doses of from 15 to 30 minims. Any active preparation of pepsine may be given along with it, but the hydrochloric acid is much the most important. Acidol or acidol-pepsine may be used instead of hydrochloric acid, and has the convenience of being easily portable.

2. PANCREATIC DIARRHOEA.

Just as gastrogenic diarrhoea is due to absence of gastric juice, so the form of diarrhoea now to be described arises from a failure of the pancreatic secretion to enter the

intestine. This may result from blocking of the pancreatic duct, from chronic pancreatitis, or from an apparently functional pancreatic achylia; but, however induced, the form of diarrhoea is quite characteristic, the stools being pale, or even quite white, in colour, greasy, very offensive, and containing on chemical examination an abnormally high proportion of unsplit fats. The following is an example:

Mr. X., aged 60, had suffered from diarrhoea, with white stools, for seven months, and had lost much weight. He attributed the origin of his troubles to an attack of "ptomaine poisoning" some two and a half years ago, since which time "his digestion has not been right." He looked ill and rather cachectic, and was considerably wasted, with a dry, harsh skin. Nothing definite could be made out on physical examination of the abdomen. The stools were colourless, and contained a large excess of fat. The pancreatic reaction in the urine was positive. A diagnosis of chronic pancreatitis was arrived at, and under treatment with pancreon the stools rapidly became normal in colour, the diarrhoea ceased, and he put on much weight.

Blocking of the pancreatic duct, with subsequent pancreatic diarrhoea, may sometimes result from the impaction of a gall stone at the lower end of the common duct. This was apparently the explanation of the following case:

Colonel L., aged 40, was suddenly seized, whilst travelling in the East three years before, with acute diarrhoea, the stools from the outset being quite white. From this attack he never really recovered, but suffered off and on from morning diarrhoea, with white milky and frothy motions. He had lost about 2 st. in weight. The case was at first regarded as one of "sprue," and he had had much treatment on that supposition without any real benefit. During the last six months he had suffered from several attacks of cramping pain in the epigastrium, which were attributed to "pyloric spasm." On examination he was found to be decidedly anaemic, but not jaundiced, very thin, and the skin dry. There was nothing definite to be made out in the abdomen. A few days afterwards he had three attacks of typical biliary colic in rapid succession, and passed a small stone the size of a pea. After this the stools became normal. A few months later several stones were removed from the gall bladder, since which time he has remained well.

A functional pancreatic achylia seems sometimes to occur as an inborn peculiarity, and to result in chronic diarrhoea of pancreatic character, with great impairment of growth and development. The so-called "pancreatic infantilism," described by Byrom Bramwell,¹ probably has this origin. It is possible, too, that defective pancreatic secretion plays a part in the production of the diarrhoea in cases of "coeliac disease," in which the stools have often the characteristic peculiarities.²

In the treatment of pancreatic diarrhoea, the amount of fat in the diet should be reduced as far as possible, and dextrinized or malted foods should replace starches to a large extent. An active pancreatic preparation, such as holadin or pankreon, should be administered about three hours after meals. In cases of chronic pancreatitis or blocking of the duct, surgical treatment is often of great service.

3. FERMENTATIVE DIARRHOEA.

There is a form of chronic diarrhoea occasionally met with which appears to be due to defective digestion of starch, although it is uncertain to what this is due. Men of about middle life seem to be most often affected, the symptoms consisting in the passage of frothy and very acid stools along with a good deal of intestinal flatulence. Microscopic examination of the stools reveals the presence of a large amount of unaltered starch. The treatment consists in reducing the amount of starch in the diet, and in the administration of calcium carbonate. Under this plan the symptoms quickly disappear.

4. ENTERITIS.

Chronic diarrhoea the result of catarrh of the small intestine (enteritis) is not so common as is often supposed; indeed, it must be regarded as distinctly rare in the adult. The most frequent causes of it are alcoholism, cirrhosis of the liver, and phthisis. The prolonged use of certain drugs also, such as arsenic and digitalis, is apt to excite it. The symptoms and appearance of the stools are not characteristic, although the presence of particles of bile-stained mucus on microscopic examination is said to be indicative of a catarrh in the small bowel. As a rule, however, the diagnosis has to be made by a process of exclusion. Sometimes the diarrhoea is so pronounced as quite to overshadow the primary disease with which it is

associated. Thus I remember a boy of 15 being brought to me to be dieted for a diarrhoea which had lasted more or less continuously for seven months. The diarrhoea was accompanied by a good deal of wasting, which was believed to be the consequence of it, but on making the usual routine examination I was surprised to find that he had a small cavity at the apex of one lung, and it was only on careful questioning that one elicited from the patient's father a history of cough of some standing. Tubercle bacilli were eventually found in the sputum, and under rest in bed, careful dieting and full doses of bismuth the patient improved sufficiently to be able to go to a sanatorium.

The diarrhoea in cases of phthisis is due, I believe, to catarrh of the small intestine, and not necessarily to ulceration. Indeed one sees cases of extensive ulceration in which there has been no looseness of the bowels.

The treatment of chronic enteritis is not an easy matter. In diet it is necessary to "individualize," as certain articles—for example, milk—which are useful in some cases are injurious in others. All mechanically, chemically, and thermally irritating foods, such as fruits, vegetables, alcohol, and sour things, iced foods and hot drinks, should be forbidden, and the diet confined to the lighter form of animal food and farinaceous articles. Chill should be carefully guarded against, and it is advisable for the patient to wear a warm abdominal belt. The most useful drugs are the carbonates of bismuth and calcium, which should be given in large doses along with carminatives, but tannic acid (for example, tannalbin) is also helpful. In some cases the best results are obtained from a saline aperient (for example, Carlsbad salt) given each morning. Treatment must always be persevering, and relapses are common.

5. COLONIC DIARRHOEA.

Disease of the colon is perhaps the commonest cause of chronic diarrhoea. The presence of visible mucus and blood in the motions always points to the colon as the seat of the mischief, but it must be remembered that in many cases these are absent, and the routine use of the sigmoidoscope in all cases of chronic looseness of the bowels is the only way to avoid error.

The three commonest causes of this variety of diarrhoea are (1) malignant disease, (2) catarrhal colitis, (3) ulcerative colitis. We may consider each of these separately.

(1) Malignant Disease.

It has probably happened to every one of experience in practice at some time or another to overlook malignant disease of the colon as the cause of a chronic diarrhoea. The mistake is easily made, for there is nothing characteristic about the diarrhoea which results from carcinoma of the colon. Not infrequently it exhibits the character of a "morning" diarrhoea, there being a tendency for an explosive action of the bowels to take place soon after waking, but this is by no means constant. Sometimes the mode of onset is very misleading, as in the following case:

Maria M., aged 51, had suffered from diarrhoea for about a year, the trouble beginning in the summer apparently as the result of eating some decomposed fish. The motions numbered from seven to eight daily, and often contained visible mucus and blood—sometimes they were "fermenting." She had lost about a stone in weight since the beginning of her illness. Physical examination revealed nothing beyond moderate wasting, and there was nothing to be felt on examination per rectum. On an exploratory operation being performed she proved to have a malignant growth in the upper part of the rectum.

Any one might have been excused for regarding this case as one of chronic catarrhal colitis, the result of an initial attack of ptomaine poisoning.

Carcinoma supervening upon an old-standing colitis is very apt to be overlooked. Thus I have known carcinoma develop in a colon which has been the seat of an ulcerative colitis for some years. In the following case it arose in a patient who had long been the subject of muco-membranous colitis:

Miss X., aged 50, had suffered for years from colitis and attacks of "congestion of the liver." She had had a great deal of treatment of various sorts, including a course of colon-douching at Harrogate, removal of the appendix, and a rest cure, with a certain amount of benefit, but lately she had lost weight rapidly and had fairly frequent and rather yellow motions. She proved to have a malignant ulcer of the rectum.

It should be specially noted that the fact that a patient is comparatively young is no bar to his having malignant disease of the colon—I have known it occur at 21—and that there may be no signs of cachexia until late in the disease. A very prolonged history of diarrhoea also does not exclude the possibility of malignant disease, as the following case exemplifies:

Miss W., aged 51, had had diarrhoea for two years, which varied greatly from day to day, the motions often amounting to eight in the twenty-four hours. They were usually light in colour, but occasionally contained mucus and dark blood. She had wasted considerably. On examination there was no marked cachexia and the abdomen showed nothing abnormal, but per rectum one could feel an indurated ulcer rather high up.

The moral of these cases is that one should insist upon an examination with the sigmoidoscope in all patients who suffer from chronic diarrhoea, as this is the only way of avoiding error. Even then one may occasionally be misled, as happened in the following case:

Albert R., aged 35, had suffered for five months from diarrhoea, supervening upon an attack of rheumatic fever, the motions numbering about eight daily. He was a well nourished man, but somewhat anaemic. A test meal showed total acidity 40; no free HCl. Examination with the sigmoidoscope, which was carried out by a careful surgeon, revealed nothing. On several occasions whilst the patient was under observation there was dark blood in the stools, and from time to time he passed pus and fibrous shreds in the urine. The cystoscope showed a condition of "cystitis cystica." As he steadily lost weight, he was explored, and a growth was found in the upper part of the sigmoid, which had a very voluminous loop, and the tumour had early become adherent to and infiltrated the bladder. The position of the growth accounted for its not being seen with the sigmoidoscope, and it was too small to feel bimanually. In an attempt to separate it the bowel ruptured, and the patient succumbed three days later.

(2) Catarrhal Colitis.

Catarrh of the colon is a common cause, perhaps one of the commonest, of chronic diarrhoea. The simplest cases are those which supervene upon an acute colitis which does not properly clear up. Examples of this are often met with in children, but may occur also in adults as a sequel of an attack of food poisoning. Of this I have met with many instances. The diarrhoea in these cases is often of the explosive "morning" type, whilst in the later part of the day the patient is comparatively comfortable, for example:

Thomas B., aged 36, had suffered from loose bowels for three or four years, but in the past year had been much worse, the motions often numbering nine daily. They usually came in the morning, the first stool being attended with some pain, but after he had been up for about three hours he found that "his inside settled down." Otherwise he counted himself a healthy man, though rather "nervous." He was a total abstainer. Whilst at rest in bed in hospital there was no diarrhoea, but the motions contained a good deal of mucus. The stomach contents showed a total acidity of 40; no free HCl. On examination with the sigmoidoscope the mucous membrane of the rectum and sigmoid was rather red and oedematous, but there was no ulceration. Under prolonged douching he improved greatly.

Examination with the sigmoidoscope in these cases shows a congested, velvety, or oedematous condition of the mucous membrane, attended perhaps with some superficial excoriation. Not infrequently the process is confined to a limited area of the bowel, such as the lower part of the sigmoid. Palpation of the abdomen often reveals slight thickening and tenderness in that region, and cramping pain is not uncommonly complained of in the left iliac fossa. It is probable that a similar localized catarrh may occur in other parts of the colon, especially, perhaps, in the neighbourhood of the ileo-caecal valve, and in such a case disease of the appendix may be closely simulated. It is possible, too, that in some instances the inflammatory process is actually kept up by an unhealthy state of the appendix, or by its adhesion to the colon.

The treatment of chronic diarrhoea arising from catarrh of the colon is not an easy matter. The diet should be regulated on the same lines as in enteritis. In recent cases small doses of castor oil and opium will often effect a cure, but in old-standing "morning diarrhoea" all one's medicinal resources may fail. Bismuth, zinc sulpho-carbolyte, a morning dose of castor oil, or an evening one of Dover's powder, all have their advocates, and each may succeed in one case and fail in another. Local treatment in the form of counter-irritation over the sigmoid, and

washing out the bowel with plain saline or mild astringent solutions, such as $\frac{1}{2}$ per cent. argyrol or protargol, is often more successful than anything else.

(3) *Ulcerative Colitis.*

Ulceration of the colon has become well recognized in recent years as a not uncommon cause of obstinate and chronic diarrhoea. In many cases the disease has originated in an attack of tropical dysentery, which the patient has never properly got over, but a certain number are met with in patients who have never been abroad. The relation of such cases to true dysentery is a matter which I do not propose to go into, as it is still the subject of dispute, and in any case is more of theoretical than practical importance. The stools in cases of ulcerative colitis, whether dysenteric or non-dysenteric in origin, tend to have more of the true colonic character than in any other form of diarrhoea, blood and mucus being usually present, whilst tenesmus is not infrequently complained of. One is aided in the diagnosis by a history of dysentery, but certainty can only be reached by the use of the sigmoidoscope.

The medical treatment of these cases is apt to be unsatisfactory, but in the milder cases one may achieve success by the use of the measures employed in catarrhal cases (see above). I have sometimes also had brilliant results from the prolonged use of an exclusive diet of peptonized milk. Vaccine treatment also has a limited sphere of usefulness, but chiefly as an aid to other methods; it is most likely to be successful when cultures yield an almost pure growth of some organism foreign to the bowel—for example, the pneumococcus. In cases in which there is a fairly recent history of acute dysentery ipecacuanha is worth a trial. It was brilliantly successful in the following case:

Alfred N., aged 35, a soldier, returned from India in December, 1903, and in February, 1907, began to suffer from diarrhoea, with the passage of blood and mucus, and attended by tenesmus. He had had several attacks of dysentery, not only in India, but also in Egypt and South Africa. No amoebae or dysenteric bacilli were found in the stools, but only various types of *B. coli*. He was given pulverized ipecacuanha in large doses, beginning with 30 grains, the usual precautions being taken against vomiting, with the result that the diarrhoea immediately ceased and the motions became normal. He left the hospital apparently quite well.

In most cases of ulcerative colitis, however, whether dysenteric in origin or not, I believe appendicostomy to be the best treatment. How successful it may be the following cases show:

Mr. M., aged 34, came under observation in April, 1910. He had an attack of dysentery in Hong Kong in 1905, and in September, 1909, underwent an operation for liver abscess in Borneo. Diarrhoea ensued after this and had continued since. He had been treated with ipecacuanha in America without success.

The stools numbered about five daily, some of them containing blood and mucus. Abdominal examination elicited slight thickening and tenderness of the sigmoid. The sigmoidoscope showed the mucous membrane as high as it could be reached to be congested, covered with glairy mucus, and studded with numerous small superficial ulcers. Appendicostomy was performed by Mr. Furnivall, and the colon washed out daily with normal saline. Seven weeks later a second examination with the sigmoidoscope showed that the mucous membrane was entirely healed; the patient had lost his diarrhoea and had gained 2½ st. in weight.

In the following case the benefit of the operation was even more striking:

Colonel E., aged 68, was first seen in July, 1907. In 1894 he left India on account of dysentery. On his return home he was treated with ipecacuanha and remained well for two years. The diarrhoea then returned and had persisted more or less ever since, in spite of treatment by various astringent medicines, by all sorts of diets, and by a course of Plombières douches.

On examination he was found to be anaemic but fairly nourished. The motions were small, frequent, extremely offensive, and contained blood and mucus; they were passed with much straining. The sigmoidoscope showed the colon to be studded with small ulcers for a distance of 20 cm. above the anus. Appendicostomy was performed and the colon washed out, first with saline and afterwards with weak protargol solution. Eighteen months later he wrote that he was perfectly well except for a slight tendency to constipation.

6. NERVOUS DIARRHOEA.

By nervous diarrhoea one means that form of chronic looseness of the bowels in which no organic disease or secretory defect is to be detected in the alimentary canal

but in which the disorder appears to result from an exaggerated irritability of the nerve mechanism which controls peristalsis. Two types can be recognized. In one the action of the bowels tends to take place immediately after or even during meals. To this type the term "post-prandial" or "lenteric" diarrhoea is usually applied. It is specially common in children. The fault here appears to consist in an exaggeration of the normal reflex stimulation of peristalsis which always takes place to a slight degree when food enters the stomach. In the other type the diarrhoea is more affected by emotional impressions. Thus, in one of my patients, a harassed, over-driven business man of anxious temperament, it always tended to come on if he was so situated that he could not easily retire for an action of the bowels—for example, if he was travelling in a railway carriage without a lavatory compartment. In another, a society lady, the trouble was always most assertive whenever she had to attend some specially important function. I have also known it affect a nervous anaesthetist (a lady) whenever she had to give an anaesthetic for a particular and rather exacting surgeon, the sound of the latter's step on the stair leading to the operating theatre being enough immediately to induce an attack.

It is possible, I think, that in some of these cases there is really an underlying degree of catarrh of the colon, which causes the latter to respond forcibly to nervous impulses, which in a healthy individual would only be sufficient to produce a mild stimulation of peristalsis.

In the treatment of the nervous form of diarrhoea not much can be effected by diet, and in any case the condition is one of such chronicity that the patient has usually found from his own experience what it is well to avoid. In the lenteric type small doses of opium before meals act almost as a specific. I know that arsenic and nuxvomica are often recommended in such cases, but for my own part I have found opium far superior to them in its power of controlling the disorder. In the emotional type opium should be reserved for use in emergencies and to enable the patient to have confidence in his bowels for particular occasions, whilst one should endeavour to allay the general condition of nervous irritability which underlies the condition by regulating the whole life and by the use of general sedatives, such as the bromides.

REFERENCES.

¹ *Scottish Medical and Surgical Journal*, xiv, 1904, p. 321. ² See a paper by the author on Coeliac Disease, *Practitioner*, August, 1911.

THE RELATIONS OF BIOLOGY TO PATHOLOGY.

By HASTINGS GILFORD, F.R.C.S.,

READING.

"We have viewed every anatomical and pathologic part as an entity, and man as an isolated phenomenon in Nature. May we not find in the laws of phylogeny and association the master key that will open to us the explanation of many of the pathologic phenomena as they have already explained many normal phenomena? And may medicine not correlate the pathologic phenomena of the sick man with the forces of evolution, as the naturalists have correlated the phenomena of the sound man, and disease as well as health be given its evolutionary setting?"—Crile, *BRITISH MEDICAL JOURNAL*, 1911, vol. ii, p. 945.

It seems at first quite preposterous for any one to assert that the work of Pasteur and of Lister has in some respects had a retarding effect upon medical science. But that such is the case can, I think, be demonstrated beyond question. So strong has been the light which has been shed by the two great luminaries upon surgical pathology and upon some departments of medicine that other and quite as important departments have been thrown into the shade. We all know how Pasteur and Lister in more than one sense revived medicine and surgery, much as Schwann revived our conceptions of anatomy, and Virchow of morbid anatomy. Before the discoveries of Pasteur and of Lister surgery had arrived at a stage from which it could not advance. It had become stagnant or chrysalised. From this hidebound condition it was liberated as by an act of obstetrics into a far freer and more abundant life than it had ever known before, and the instrument by means of which this was accomplished was biology. And