REMARKS ON DILATATION OF THE STOMACH.

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CASES of dilatation of the stomach may be usefully divided into—

Class I. Acute dilatation.

Class II. Cases depending on pyloric obstruction from coarse mechanical causes—such as thickening, or growths of, or within, the stomach or pylorus, or from the pressure of external tumours.

Class III. Intrinsic chronic dilatation.

I. As regards the first class, it is very necessary to draw a distinction between dilatation and distension. By the latter, I understand a condition in which the stomach, if emptied, returns to a normal size; by dilatation, a condition in which the stomach, even if emptied, does not do so. This distinction has not invariably been observed by writers. Thus, I find a case of Dr. Hughes Bennett's, which is headed as a "singular mode of death from enormous distension of the stomach", which was supposed to have been caused by drinking a quantity of aerated lemonade. Dr. Fagge quotes this case in an interesting paper on "Acute Dilatation of the Stomach"; and adds two of his own, in each of which the stomach, on being emptied of its contents, contracted to a normal size. Other cases, occurring in the course of some acute disease, have been reported; and those cases, I think, are generally to be classified under the head of distension rather than of dilatation. Gross, of Nancy, drew off ten pints of liquid from the stomach of a woman suffering from peritonitis after herniotomy.

Three interesting cases, recorded by Fürstner, might be more appropriately described as recurrent distension rather than as dilatation, and may therefore be referred to here. The first one was a female aged 21, who had received a blow on the epigastrium at the age of seventeen; intense pain immediately followed. Some time afterwards, she had convulsive attacks, with loss of consciousness; after which the gastric region swelled. There was no relief from frequent vomiting; but, after four days, the gastric symptoms subsided. These two groups of symptoms continued to alternate, or to be more or less intermixed. Fürstner found the abdomen distended and painful; the lower border of the stomach was visible four-fifths of an inch above the navel; the hysterolepsy continued. No benefit was produced by ice, subcutaneous injection of morphia, or washing out. A moderately strong induced current was used: one moist electrode held on the left hypochondrium, the other over the stomach, and drawn with considerable pressure from the cardia to the pylorus. The result was constant; after a short time the swelling diminished, the pain ceased, and percussion showed that the stomach returned to normal limits. It did not re-expand for some hours or days afterwards, and was always reducible by the current.

That there is a difference between the distension and the dilatation of a hollow viscus hardly admits of dispute, though no doubt the former may produce the latter, and it may not be easy to draw the line in every case. These points, and the question of acute dilatation, may be usefully discussed.

II. The second class of cases comprises those in which there is some condition which is obviously competent, in a mechanical manner, to prevent the ingesta from leaving the stomach; for example: malignant disease situated in or about the pylorus, or duodenum, or cicatrices of healed ulcers in the neighbourhood of the pylorus, or stricture of this orifice, or tumours external to but pressing on it. A few cases are recorded where the stomach would appear to have become dilated from adhesions contracted by it to other viscera, or by being dragged down by enormous herniæ; these, I do not propose to further consider. When any unusual obstacle is opposed to the exit of ingesta, the first result probably is increased effort on the part of the stomach to overcome the resistance; and in some cases compensatory hypertrophy, in others atrophy. Early and frequent vomiting, no doubt, in some cases helps to prevent overdistension and dilatation of the stomach, as may also careful limitation, either instinctive or artificial, of the quantity of the ingesta. In other cases, the obstruction is sufficient to ensure the gradual enlargement of the stomach; and we find *post mortem* evidence of the struggles which the stomach has made, in the shape of hypertrophy of its muscular coat—a similar change sometimes affecting the mucous,

and (more rarely) even the serous, coats. All these tissues may have become fatty or otherwise degenerated.

In most cases, in this as well as in the next class, there is no doubt another factor at work in creating the disproportion between the cubic contents of the stomach and the facility of their passage into the duodenum. This factor is the multiplication of such organisms as *torulae* and *sarcinae*. We cannot, of course, nowadays imagine that these bodies originate in the stomach. We can only believe that their germs are common; that we have all of us, over and over again, had them in our stomachs; but that, fortunately for us, we do not furnish a nidus suitable for their growth and multiplication. One chief reason why they do not infest us all is, that we do not give them time to do so. Hence an important inference: viz., that any stomach, in the contents of which we find them, has allowed those contents to remain in it for a very undue length of time. We shall seldom be wrong if we draw a further inference: viz., that such a stomach is dilated. It is an interesting question, how far dilatation of the stomach is the result of these growths, and of the formation of gases due to them and to decomposition of the food.

It is also an interesting question, how far, and by what means, we can discriminate between this and the next class during life. This is especially important as regards prognosis.

III. The third class comprises cases in which we do not find, after death, any physical or mechanical cause to explain the non-escape of food from the stomach; and yet this is enlarged, and its walls are either hypertrophied or atrophied; or partly the former generally towards the pylorus, and partly the latter generally towards the cardia. Singularly enough, cases are even recorded in which the pyloric orifice has been found after death to be unduly patulous. This fact remains a paradox, of which I have no explanation to suggest. Many cases of intrinsic dilatation have a remarkably long clinical history, extending over ten, twenty, or even thirty years. The early history is one of gastric catarrh with vomiting, recurring at intervals of perhaps six, twelve, or twenty-four months—the attacks gradually becoming more frequent, and the symptoms at last constant, when dilatation has been recognised. The question here naturally arises: Were the early attacks temporary dilatation; or perhaps, more accurately, distension of the stomach gradually lapsing into permanent dilatation? or, has the great dilatation existed for many years, perhaps *ab initio*, but with intervals in which the stomach was quiescent, and with paroxysms in which it was irritable? We know, from observation, that such alternations are quite possible in a largely and permanently dilated stomach; but I conjecture that future investigation is likely to find that the former explanation is the true one. I have seen these cases, and so have others, and recorded them; but we have seen them late, and I am not aware of any case which has been clinically studied throughout. The answer to this question will probably come from general practitioners, who have opportunities of watching a man from his cradle to his grave. Knowledge on this point would probably be of much assistance to us in answering another question, viz.: How or why does gastric catarrh produce dilatation of the stomach? An answer suggests itself: by producing atrophy of the coats. But the incorrectness of this reply is at once shown by the fact, that some, or some parts, of the coats may be hypertrophied. Does the tenacious mucus afford a suitable nidus for the development of *sarcinae*? This is possible; but it is not in all cases that we find these organisms—at all events, in any notable quantity. Does the tenacious mucus in any way plug up the pyloric orifice? It is somewhat difficult to conceive this, but it is possible. Does the coating of mucus interfere with excitement by the chyme of the sensibility of the nervous apparatus, which is concerned in relaxing the pyloric orifice, and allowing the chyme to pass? There is yet another way in which it is conceivable that the pylorus may be caused to offer an undue obstacle to the exit of food. This is by a prolonged tonic contraction of its sphincter, consequent upon undue irritation by acidity of the contents of the stomach. I will briefly mention such a case.

The late Mr. Samuel Wood, of Shrewsbury, sent up to me his coachman, who had been for some time incapacitated by severe gastric symptoms. He had been ill about six months, with constant pain and discomfort in the stomach; with occasional exacerbation, and vomiting every two or three days, bringing up a large quantity of intensely sour fluid. His stomach was decidedly dilated. I took him into hospital, and the same evening he vomited. The next morning I put him on milk-diet (which he had tried before his admission), and ordered him full doses of carbonate of soda, with two or three minims of laudanum. He never vomited again, gradually recovered his health and strength, and the stomach returned to its normal size. The treatment of this case was based on the view that, if there were no organic obstruction to the pylorus, the constriction of this orifice was due to spasm caused by acidity.

Another case was equally satisfactory.

A gentleman, aged about 26, had suffered from gastric pain and disturbance, with infrequent vomiting of highly acid character and large in quantity, for nine or ten weeks. A few days before I saw him, a small tumour had been discovered in the abdomen. It was painful, tender, and semi-elastic, about the size of a walnut, but flattened; it was not very far off the situation of the pylorus. His stomach was dilated. I advised carbonate of soda, in quantity and frequency according to the urgency of the gastric pains, and a milk-diet. The case was, of course, of a very suspicious character; but I doubted whether the tumour was really within the abdomen, and so gave a guarded opinion. It turned out to be a parietal abscess, which in due time was opened. He had no return of the vomiting or gastric disturbance, except on one occasion, when he had been incautious in his diet, and neglected the soda. I only saw him two or three times, but heard that he quite recovered. The gastric catarrh seemed to have originated from a hurried walk soon after dinner.

These two were cases in which the stomach was not permanently and irrecoverably dilated, as it was in the next one, where, nevertheless, the symptoms complained of were equally due to acidity, the correction of which certainly enabled the food to pass the pylorus with more facility.

A gentleman, aged 46, had for twenty years been subject, every six or eight months, to attacks of gastric disturbance, resulting in, and being cured by, one vomit. For twelve months, the attacks had been much more frequent, at not more than two weeks' interval. For several months he vomited about every second day; there were great emaciation and debility. Before vomiting, he had "a burning pain at the pit of the stomach, as if", to use his own words, "the stomach was all on fire". The ejecta were described as intensely sour, burning his throat and setting his teeth on edge. He had been for three months, by advice of another physician, on milk-diet, with occasionally a little bread-and-butter. The edge of the stomach was two inches below the umbilicus. I ordered him to take one-third of lime-water with his milk, and half a drachm of carbonate of soda two or three times a day. I saw him again in a fortnight, and he had had no pain or vomiting, except one day on which he walked a good deal, took improper food, and omitted his medicine. His general health and strength were much improved. He had, subsequently, return of gastric trouble, not due to acidity and not relieved by soda, but much relieved by peptonised gruel. The stomach remained nearly, if not quite, of the same size.

In some cases of dilated stomach, we do not find undue acidity; still, I venture to suggest for discussion these two propositions.

1. In some cases dilatation of the stomach is due to spasmodic closure of the pylorus, caused by acidity of the contents of the stomach; and 2. In some cases of dilatation, the neutralisation of the contents of the stomach facilitates their passage through the pylorus, and relieves some of the symptoms.

Diagnosis logically precedes treatment; but, as we have been led to digress into the latter, it is perhaps better to go on with it here.

A good many years ago, a woman was under my care as an out-patient, but did not improve. I took her into the hospital; as she was in the habit of vomiting every third night, and this was the third morning, I gave her an emetic, chiefly with the object of procuring the ejecta, to ascertain whether they contained sarcinæ, which they did. She remained in the hospital a few weeks, went home, returned about twelve months afterwards with plain evidence of a tumour, probably malignant, in the pyloric region, and died; no *post mortem* examination was allowed. The emetic acted well; and from that time to her death she never vomited again.

A patient handed over to me by the late Dr. Evans, on his retirement, was the subject of a tumour in the upper part of the abdomen, and suffered much from sarcinous vomiting, which had not been relieved by treatment. Guided by the preceding case, I gave her an emetic, which cured the vomiting for more than two months; and it was several times relieved in the same way. She then went to some distance from Birmingham, and died.

A gentleman suffering from dilated stomach, who consulted me lately, found great relief from an occasional emetic. In this case, the reason why an emetic gave relief was very simple; it emptied him sooner than nature would have done.

In many of these cases, the gradual filling up and distension of the stomach produces inconvenience, discomfort, and even pain for many hours before vomiting occurs; an emetic merely anticipates nature's own method of relief. Even in such cases, the more complete emptying of the stomach only defers the recurrence of repletion.

But in the first two cases above mentioned, one emetic did a great deal more. In the first, vomiting never returned; in the second, it did not return for many weeks, and this on several occasions. This is

the more remarkable, in that both were cases in which it is as certain as it could be without a *post mortem* examination, that there was a mechanical occlusion of the pylorus. In both cases, sarcinæ were present in great profusion. It is conceivable that the emetic, which in all the cases was composed of ten grains each of ipecacuanha powder and sulphate of zinc, dislodged all the sarcinæ, and perhaps a thick mucus in which sarcinous germs were embedded; and that in one case the patient escaped further impregnation, whilst the other was not so fortunate. This is a point on which further suggestions would be most interesting. To destroy sarcinæ or torulæ, various drugs have been employed, and in some cases with undoubted success. Amongst these, sulphite and hyposulphite of soda, sulphurous acid, and salicylate of soda are the best: the last drug is perhaps the most certain; but sometimes one succeeds where another fails.

Canstatt, in 1856, recommended the regular emptying of the stomach by means of the pump when the patient had lost the power of vomiting. In 1869, Kussmaul extended the use of the pump to all cases as a remedial, and, where such a result was possible, a curative, measure; and the stomach was not only emptied, but washed out with water either pure or medicated with carbonic acid, carbonate of soda, etc. In mineral water places, the local water is used. It is an objection to the pump that the thin and flaccid wall may be sucked in and torn; this has happened, though not very frequently. To obviate this danger, a simple flexible tube has been used as a syphon; the objection to this plan is, that the orifice is liable to be occluded by solid pieces of food. Catarrh of the stomach, even when the dilatation is slight, or its existence doubtful, is certainly, in many cases, remarkably benefited by this method; whilst the stomach, by being emptied, has the best chance of restoring itself to its normal size by contraction of its walls. Some persons, however, will not submit to this treatment. In some, the results are not beneficial. My late colleague Mr. Goodall and I had a case, some years ago, in which we gave it an extended trial without advantage. It was a case in which the stomach showed no disposition to regain its normal calibre, and the patient seemed to be most comfortable when his stomach was half full. I am sure that in some such cases cure is hopeless, and alleviation may be procured by some of the other expedients which I have mentioned, and which are less repugnant to some persons than is the passing of a tube. Nevertheless, after admitting exceptions, the rule still remains, that the plan of emptying and washing the stomach through the tube is one which is not only based upon sound theoretical considerations, but is also one which produces results favourable even beyond anticipation. Alleviation is procured for incurable cases; but after an interval, to be determined by a recurrence of the more urgent symptoms, the process requires to be repeated. I believe that Dr. J. O. Affleck was the first to record cases thus treated in this country.

As in all gastric derangements, the question of diet is one of importance. In view of the desirability of permitting the stomach to regain its normal calibre, a solid diet naturally suggests itself. In one case, certainly, a considerable restriction in the fluid ingesta much alleviated the symptoms. But we have to regard not only the size of the stomach, but the state of its mucous membrane, often, even usually, and perhaps almost always, in, or verging on, a catarrhal condition. When such catarrh is at all acute—and these stomachs are all liable to intensification of the catarrhal condition—a bland fluid or pultaceous diet is indicated. In one such case, I found the greatest benefit from peptonised milk-gruel. Not only were the gastric symptoms relieved, but the bowels, which had been very costive, became regular, indicating a more free exit of the ingesta from the stomach. It has been advised to use liquid food in small quantities frequently repeated. In some cases of great gastric irritation, this may be desirable; but, unless the exit of food be thereby facilitated, the stomach will become full just the same. Upon all these points there is, I beg to suggest, room for useful discussion, in which it would perhaps be well to discriminate between cases which admit of cure and those which admit of relief only.

It remains now to advert to the diagnosis of this condition. I have no hesitation in claiming the first importance for the character of the vomiting; not only because it is in itself one of the most characteristic symptoms, but more especially because it at once suggests to us the nature of the disease, and the necessity of making due physical examination of the abdomen.

The vomiting is unfrequent; the interval is in any given case fairly constant, but may in one case be twenty-four hours, in another two or three or four days. It is preceded not so much by nausea, as by a feeling of painful distension or oppression, or uneasiness, and is followed by speedy, often immediate and great, relief.

The quantity vomited is large, and it is brought up often at one effort, or else by two or perhaps three efforts, but all occurring within

a short period, say a quarter or half an hour, or thereabouts. The ejecta are commonly yeasty in appearance, inodorous, or sour smelling if very acid; it is curious that they may be inodorous even when much offensive gas is expelled by eructation.

It is right to observe that in some instances, probably from an exacerbation of the catarrh, vomiting may be frequent; but, even in such cases, a previous history of vomiting, such as I have described, may be obtained.

Physical examination reveals the existence of a large splashing cavity, the lower border often at or below the umbilicus. The lower portion is probably dull and fluctuating on percussion, the upper tympanic from gas; the dull part probably projecting and rounded, the upper probably flatter or quite flat. The extent of dulness or tympany will naturally vary, as we examine the patient before or soon after vomiting. The weight of its contents drags the stomach downwards and away from the epigastrium, which is therefore flattened. The heart-sounds acquired a metallic resonant character, from proximity of the tympanic stomach, in four cases recorded by Riess.

Emaciation, the facies abdominalis, thirst, anorexia, etc., are in proportion to the duration of the disease, the amount of gastric catarrh, and the atrophy of the gastric coats. The amount of fluid which may be poured into the stomach through a tube is not only evidence of the existence of dilatation, but a measure of its extent. In some instances, the existence of the disease may be actually demonstrated by the pressure of the stomach-tube against the wall of the abdomen. Physical examination has even detected dilatation when no symptoms existed to suggest its presence.

Although the diagnosis is not difficult or precarious when considerable dilatation exists, it is much more doubtful when the stomach is only slightly enlarged. Light thrown upon this question would be most valuable, especially in regard to the early diagnosis of those cases where it is likely that the stomach may have been for years gradually acquiring a large size, and which might have been kept within moderate limits by suitable treatment in their early stages.

The limitation of time prescribed by the laws of our Association compels me to be brief, and may, I hope, serve to excuse the inadequacy of my *résumé* of some of the leading features of this most interesting disorder.

FORTY-NINTH ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

Held in RYDE, Aug. 9th, 10th, 11th, and 12th, 1881.

PROCEEDINGS OF SECTIONS.

SECTION A.—MEDICINE.

Wednesday, August 10th, 1881.

THE Section was opened with an address by the President, E. LONG FOX, M.D., which was published at page 349 of the JOURNAL for August 27th.

DISCUSSION ON DILATATION OF THE STOMACH.

Dr. WADE (Birmingham) opened the discussion by reading a paper, which is published at page 471.

Dr. KEALY (Gosport) called attention to a case of dilatation of the stomach from pyloric disease, which had been under his observation since November 1876. The patient had for some time been under observation and varied treatment, when suddenly it occurred to him that it was a case of dilatation of the stomach; and, after various examinations, he came to the conclusion that the patient was really suffering from pyloric disease. The condition of that case was controlled by two grains of morphia night and morning, irrespective of diet. The patient was now living, and able to be about. If the opiate were omitted, the symptoms returned.—Mr. PORRITT said that at one time, when he was resident in the Leeds Infirmary, there was a case of chorea in the hospital. The patient was a girl sixteen years old, and was given chloroform; and, upon *post mortem* examination, they found that the stomach filled the entire abdomen, and was almost empty and flaccid. He was much struck with the fact when Dr. Wade mentioned that dilatation of the stomach had come on during epilepsy, and by his calling the condition there distension, and not dilatation. In this case of chorea, was it distension or dilatation that had occurred? He had detected the condition in several cases of epilepsy, and he thought that there was here a similar state. Dr. Wade had deprecated to some extent the use of the tube. They always used the tube in Leeds,

and there was at first some difficulty experienced in getting the patients to use it. But some of those had suffered so long that they were very grateful for the relief it gave them; and some patients had, after a time, learned to be able to conduct the washing themselves. Dr. Wade mentioned the difficulties of diagnosis; but it had been taught in the Leeds Hospital that, by putting the stethoscope on the abdomen and percussing, they could hear a very different pitch of resonance from that on the area covered by the stomach.—Dr. SHINGLETON SMITH (Clifton) wished to offer a few remarks on the cause of dilatation. Dr. Wade had asked whether it could be due to spasm of the pylorus, or to a condition of catarrh of the coats of the stomach. Dr. Wade had made a cursory allusion to the great amount of the secretion; and did not that fact point to a clue to the pathology of that condition? The stomach secreted while very little or no absorption went on in it. In the state of catarrh, the secretion was constantly forming and accumulating. Some one—whose name he forgot—had found that strychnia was not absorbed in the stomach of a horse when the pylorus was tied. He had been very much struck by the total failure of drugs to relieve pains in this condition, except large quantities of opium and morphia. He had no doubt that others would have had the same experience. But it appeared to him that the want of absorption in the stomach, certainly in chronic catarrh, was very decided; and that it had something to do with this accumulation in the stomach, and with the failure of drugs. If that were the case, was there any effective treatment? He had had no experience of the use of the tube, owing to the disagreeableness of it to the patient, and his consequently wishing to avoid it, if possible; but the tube was indicated from the physiological point of view, and there certainly should be far more experience of it than they had as yet.—Dr. HAYDEN (Dublin) feared very much that the use of the tube had not been sufficiently favoured by practitioners. He remembered, a good many years ago, a patient from an extreme part of Ireland coming to the hospital in Dublin, and placing himself under his care. He was greatly emaciated, and to all appearances the subject of mortal pyloric disease. It was impossible, owing to the state of distension of the stomach, to discover whether such was really the case or not. He had at once placed the man under treatment with the tube, and washed out the stomach with a strong solution of hyposulphite of soda. The man expressed himself as having experienced relief at once. He very soon gained flesh; his vomiting ceased; and in two months he left hospital, having gained several pounds in weight, and to all appearances perfectly well. He believed that that was one of the cases in which the use of food in excess had been indulged in, for the man had an enormous appetite. He believed that catarrh of the stomach was often the first of the morbid processes in dilatation, and arrested absorption; and that this involved the absence of the normal secretion of the stomach—the gastric juice. He believed that the use of alkalies was of advantage, especially in these cases. No doubt the want of sufficient absorption of the contents of the stomach was a feature of them, due not only to atrophy, and consequently distension of the walls, but also probably to venous obstruction in the neighbourhood; and the first step in the curative process was to relieve the organ of its contents, and to allow its coats to regain their muscular tone and movement. In regard to the diagnosis of pyloric tumours, he knew no better mode than to make two or three repeated examinations. In some cases, the diagnosis had been very easy; but the next day the tumour might escape observation, and perhaps for a week they could not find it again. It was conceivable that, in the interval, a physician coming new to such a case might make a wrong diagnosis. As he had been using the tube for a very long time, he would urge on all to make a freer and more general use of the instrument in connection with dilatation.—Dr. SILVER (London) said that there were cases in which the tube undoubtedly did good; but there were other cases in which, if it did no harm, it would do no good whatever. There were cases—and these were by no means the worst—where the contents of the stomach had been retained for days, and then there was one fit of vomiting, with relief. Undoubtedly, in these cases, if the food had been taken in a fluid form, and had undergone no great degree of change, it would come away easily enough with the tube; but if the food had been solid, it would not be so removed. Another case in which the tube would be of no use was that in which the food had been digested for a considerable time, and a little fluid food had passed through into the duodenum, and where the residual thick coating of the stomach could not be got rid of without great efforts at vomiting. The use of the tube was, no doubt, however, of the deepest value. In regard to the use of large doses of carbonate of soda, Dr. Wade did not allude to the principle on which he recommended it. The carbonate fulfilled a double object. One object was, in his (Dr. Silver's) view, somewhat dangerous. First of all, it would counteract free acidity, which was not universal; but it would set free