milk and one egg beaten up with sugar are added until a total of $1\frac{1}{2}$ pints of milk and six or eight eggs are consumed, and this corresponds with the eighth day. From the third to the eighth day, according to the disappearance of symptoms, 1 oz. of raw, or nearly raw, minced beef or chicken is given, and increased next day to 2 oz. if well borne. About the eighth day a little well-boiled rice is given, followed in a few days by softened bread, and then a small amount of bread-and-butter. The number of eggs are gradually reduced, and one or two of them are given, lightly boiled, as the other food is increased. During the third week more mince and pounded fish are given, and by the end of the fourth week the patient is able to partake of normal diet and to get out of bed. He leaves hospital about two weeks after.

4. As to medicine: For the first ten days 30 grains of subnitrate of bismuth without mucilage are given thrice daily, and towards the end of the first week pills are administered containing dried sulphate of iron and light magnesia. The amount of sulphate of iron may be increased from $7\frac{1}{2}$ grains to 30 grains daily.

5. The bowels are not interfered with during the first week, although a natural action may occur, but afterwards an enema, if required, is administered every fourth day.

There is nothing of very much importance in all this detail—nothing that appeals for its enthusiastic and slavish adoption any more than for its scornful rejection. To me it seems that there is included in the method one outstanding principle, the adoption of which, if it can be carried out with safety to the patient, is an advance on previous dietetic methods. This principle is the giving of easily assimilated protein food in rapidly increasing amount, so that the excess of free HCl is taken into organic combination, and by giving a large amount of nutriment the strength of the patient is quickly restored, and the gain in weight is marked. I have not used the ice-bag. Professor Lenhartz is a strong advocate for a supply of good teeth, and instructs his patients to masticate slowly. We all agree in the necessity for teeth that can chew. It is possible that much ill-health and anaemia may arise from continued absorption or the swallowing of septic material in cases of dental caries, but the want of grinders is, I fancy, greatly to blame in the production of gastric ulcer. For the person who is unable to chew falls back upon soft carbohydrate food, which tends to produce excess of HCl without using it up by forming organic compounds.

I wish to refer very briefly to my own experience in the adoption of Lenhartz's treatment, which I have followed fairly closely in all respects with the exception of the ice-bag.

In a case of chronic ulcer with gastrectasis the patient, a labourer, aged 28 years, was put on the treatment on May 5th last, when he weighed 7 st. 1 lb. He left hospital free of all symptoms on June 22nd, when he weighed 9 st. 4 lb. (a gain of 2 st. 3 lb.). His symptoms of pain and discomfort returned in August. He again entered hospital on November 4th, when he was transferred to the surgical wards under Mr. Taylor's care, and a gastro-enterostomy was performed and an ulcer found. He is now in excellent health, I am told.

In three cases of acute ulcer in women the results were most satisfactory.

One remained in hospital under this treatment from May 25th until June 22nd. She left free from symptoms, was eating ordinary diet, and increased in weight from 7 st. 4 lb. to 8 st. 7 lb., and is still in good health.

The second was placed on the treatment on September 26th, and left hospital on October 31st, having no symptoms, eating all food, and having increased in weight from 7 st. 6 lb. to 8 st. 7 lb.

The third was placed upon the treatment on November 20th, 1909, and she was free from all symptoms, eating all food, and left hospital on January 3rd, 1910.

I have tried the immediate feeding on several other cases where the diagnosis was in favour of a neurosis rather than of ulcer, but the results were not satisfactory.

REFERENCE.

¹ *Quarterly Journal of Medicine*, October, 1909.

ARRANGEMENTS have been made for lectures on tropical subjects to be delivered to nurses at the London School of Tropical Medicine, Royal Albert Dock, E. Any qualified nurse may attend the course, whether she intends proceeding abroad or not.

AN ANALYSIS OF A SERIES OF CASES OF PERFORATED GASTRIC AND DUODENAL ULCERS.

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THE following remarks are based on a series of 11 cases of perforated gastric and duodenal ulcers which have been under my care during the past two years in the wards of the Western Infirmary. The cases, while perhaps in no way very unusual, serve to illustrate many points in the diagnosis, and the results of treatment of these lesions, and some of them, I think, present features of special interest sufficient to warrant their publication.

I have not distinguished the gastric from the duodenal cases for the reason that, in the main, the clinical signs and symptoms are identical, and the treatment is the same. It is not always possible to say to which of the two classes a given case belongs until the abdomen is opened, although sometimes the previous history may suggest a definite site for the lesion.

My cases bear out the generally accepted view that duodenal ulcer is more common in men, and gastric ulcer in women. All the duodenal cases, 4 in number, occurred in males, while of the 7 gastric cases, 6 occurred in females. One of the latter (Case ix) was really a malignant tumour of the pylorus, which gave way suddenly while the patient was in hospital, with the usual sudden acute symptoms of a perforating lesion; while Case xi was a perforated "peptic ulcer" at the line of junction between stomach and jejunum, in a patient on whom a gastro-enterostomy had been performed four months previously.

The ages of the patients varied from 21 to 65 years, the average age being 39 years.

The site of the ulcer in all but two of the cases—that is, in 82 per cent. of the whole—was quite close to the pylorus, and in the whole series was situated on the anterior wall of the organ.

The ulcer presented in most of the cases a more or less definite punched-out appearance, with characteristic hard edges, and varied in size from a very tiny opening to $\frac{1}{2}$ in. or more in diameter. Cases i and iv, both of which died, presented not so much a perforated ulcer as a large ragged opening, which could not be satisfactorily closed by suture. In Case ii, although the history of the attack and the symptoms on admission seemed quite typical, no actual perforation was found at the operation. In Case vii, although I had no doubt as to the diagnosis, operation was not performed immediately, but eight days after admission, for a large subphrenic abscess.

Mortality—Excluding, for obvious reasons, the malignant case above referred to (Case ix), we have 10 cases operated on, of which 7 recovered and 3 died—a mortality of 30 per cent.

Diagnosis.

In considering the question of diagnosis of perforation of stomach or duodenum, it must be recollected that the symptoms most characteristic of this catastrophe are not necessarily those exhibited by the patient when admitted to hospital. The most typical signs are those presented at the very beginning, which therefore come under the observation of the practitioner first called in to see the patient. The signs often described in textbooks as indicating rupture of stomach or duodenum, such as distension of the abdomen, absence or diminution of liver dullness, general tenderness and rigidity, and rise of temperature, are late symptoms, indicating spreading mischief, due probably to perforation, but are not signs to be awaited before arriving at a diagnosis, which can as a rule be made quite early, from a proper consideration of the mode of onset of the illness and the character and site of the rigidity.

The mode of onset is characterized more than anything else by its suddenness. This was a feature in practically all the cases; the terms "stricken down," "doubled up," or "seized" with severe or violent pain being the descriptions commonly given. The importance of recognizing this, the earliest indication of perforation, cannot be too strongly insisted on, and the responsibility for recognizing

its gravity most often rests upon the medical attendant first called in to see the patient. The following description of the initial symptoms, from a note sent by the doctor with one of these patients, is worth quoting: "The patient was very suddenly seized with a very acute pain in the abdomen to-day. When I saw her she appeared to be suffering great agony. The abdomen was quite rigid, and the breathing was painful. Temperature subnormal. Pulse slow and feeble." This sudden onset of pain is accompanied by collapse, from which the patient may have recovered before reaching the hospital.

The pain in all the cases was referred to the upper abdomen, becoming localized in the epigastric or subcostal regions. One of the patients with duodenal ulcer complained of pain in the right shoulder.

Rigidity and tenderness follow this onset of acute pain. The abdominal muscles are on guard at once. Rigidity was present in all the cases in the upper abdomen, or at any rate was most marked there. In Case x it was most marked on the left side, corresponding with the seat of the ulcer.

Vomiting was definitely stated to have occurred in four cases. In one there had been vomiting of blood. In the other cases no vomiting had occurred at the time.

Distension of the abdomen was marked in only four cases (Cases v, viii, ix, xi).

Absence or marked diminution of liver dullness was noted in the same four cases.

Temperature on admission, varied from 96.4° to 102° F.

Pulse on admission, varied from 64 to 148.

Respirations on admission, varied from 16 to 28.

The appearance of the patient, seen after the first agony and collapse had passed off, was variable, and sometimes misleading, but as a rule there was something of the anxious look so characteristic of serious abdominal trouble.

Previous History.—In every one of the cases there was a history of previous gastric trouble—in Cases vi and x for a week and ten days respectively, but in the majority of the cases for a much longer period of months or years. In two of the duodenal cases the patient gave a history of the characteristic "hunger pain," coming on two or more hours after a meal.

Treatment.

The time which had elapsed between the onset of the symptoms and the operation varied from four to forty-eight hours. With three exceptions, they were operated on within fourteen hours from the time of rupture.

Operation.—The abdomen was opened by a vertical incision above the umbilicus, either in the linea alba or through the inner part of the rectus sheath. The escape of gas and fluid at once confirmed the diagnosis. No great difficulty was experienced in any of these cases in locating the perforation, which in every instance was situated in the anterior wall of the organ. The perforation was closed by infolding it with a double layer of Lembert stitches of catgut, or an inner of catgut and an outer of fine silk. Only in one instance (Case i) did I excise the ulcer. In two of the cases, for reasons which are given in the summaries (Cases v and viii), I performed gastro-enterostomy at the same time. I do not as a rule flush out the abdomen with saline or other fluid, believing it to be neither necessary nor desirable. Efficient drainage was provided by a tube in the pelvis through a median suprapubic incision, and in the majority of the cases by an additional opening in the right flank. Usually, also, a small drain tube or gauze was put into the upper wound, and removed in a few days.

After-Treatment.—The patient was kept in bed in the Fowler position. Salines and nutrients were given by the rectum. Small quantities of saline were permitted by the mouth at the end of forty-eight hours, and gradually chicken tea and other liquid nourishment was added. There were no complications to record in any of the cases which recovered. The patient, as a rule, was able to leave the hospital at the end of a month.

After-Results.

I made a point of personally ascertaining the condition of these patients in December, 1909. They were all in very good health. Among the earlier cases, three state positively that they have had no trouble since the operation. Two have had slight symptoms of indigestion for the first time during the previous few weeks. Of these two,

one is a gastric case operated on two and a half years ago; the other a duodenal case after an interval of fifteen months. The last two cases of the series, operated on only three months ago, have so far remained quite well.

SUMMARY OF CASES.

I have to thank the following surgeons—Sir Hector C. Cameron, Sir George T. Beatson, Dr. Renton, and Dr. Dalziel—for permission to publish the summary of cases occurring in their respective wards.

CASE I.

E. J., a woman aged 45, was admitted on March 25th, 1907. Twelve hours previously she was stricken down with sudden acute abdominal pain.

On Admission.—Temperature was 99° F., pulse 136. She looked very ill. The abdomen was intensely tender and rigid all over, but more markedly so in the epigastrium. Respirations were very rapid.

Previous History.—She has had gastric trouble since childhood, and has been ailing more or less continuously for the past year, with frequent attacks of sickness, pain, and vomiting after food. Three days ago she vomited blood, and has taken no food since.

Operation thirteen hours after perforation. On opening the abdomen in the middle line above the umbilicus some gas and much dirty brown fluid escaped. A large perforation was found, involving the pylorus, which was extremely stenosed, only admitting a director. The ulcer was excised and the wound stitched in the transverse diameter (pyloroplasty). A large drain was put in above the pubes and in either flank. The patient left the table pulseless, and died two hours later.

CASE II.

A. W., a woman aged 21, was admitted on April 7th, 1907, as a case of ruptured gastric ulcer. Twelve hours prior to admission she was seized with severe pain, which doubled her up, and which lasted for several hours, accompanied by sickness and vomiting.

On Admission.—Temperature 99.4° F., pulse 120. There was general abdominal tenderness, most marked in the epigastric region. Rigidity was not very marked, and there was little or no distension and no diminution of liver dullness.

Previous History.—For three months she has complained of pain soon after food but no vomiting.

Operation fourteen hours after onset of acute symptoms. No perforation was discovered, but a well-marked thickened and congested area was found on the anterior wall of the stomach, close to the pylorus. The abdominal wound was closed in layers. Recovery uneventful.

CASE III.

L. K., a woman aged 28, was admitted on September 3rd, 1907. She was sent in by Dr. MacIntyre of Airdrie for immediate surgical treatment. While engaged "doing a washing" in the morning, she was seized suddenly with the usual acute symptoms.

On Admission.—Temperature 100° F., pulse 148, respirations, 28. She looked extremely ill, with a typical abdominal facies, and lay with her knees drawn up. The abdomen was rigid and tender, chiefly on the left side; respiration was thoracic and painful. There was no distension, and no apparent encroachment on the liver dullness.

Previous History.—She had been under treatment for gastric ulcer for some years, giving the usual story of pain and vomiting soon after food.

Operation nine hours after rupture. On opening the abdomen some air escaped, and a quantity of milky fluid mixed with particles of food. A perforation of the size of a threepenny piece was found in the anterior wall near the oesophagus, and close to the lesser curvature. The ulcer was infolded with a double row of Lembert stitches, and a small drain left in the wound. A large glass drainage tube was inserted through a suprapubic wound, and the abdomen flushed with saline.

Recovery. Dismissed October 12th.

CASE IV.

A. M., a man aged 53, was admitted on December 15th, 1907, in extremis, having been ill for two days. His illness set in with sudden pain and vomiting.

Previous History.—No definite information could be got, except that he had had trouble with his stomach for a very long time.

Operation forty-eight hours after perforation. The abdomen was found full of faeculent material. The intestines were very much distended, with other signs of general peritonitis. A large ragged opening was found involving the pylorus, and first part of the duodenum, from which liquid faeces continued to flow freely into the general peritoneal cavity. The patient was obviously dying, and nothing was done beyond inserting a drainage tube. He died two hours later. No examination was allowed.

CASE V.

J. M., a woman aged 22, sent in by Dr. Nairn of Greenock, was admitted on May 13th, 1908. Her illness began the previous day, with sudden severe abdominal pain, accompanied by vomiting and fever.

On Admission.—The temperature was 102° F., and pulse 130. She looked very ill. The abdomen was rigid and tender, very much distended and tympanitic. Liver dullness was absent.

Previous History.—Pain and vomiting after food for some considerable time.

Operation twenty-seven hours after perforation. On opening the abdomen above the umbilicus, gas and free fluid escaped. On the anterior wall of the stomach, near the pylorus, a perforation was found in the centre of a sloughy area of considerable extent. The stomach was markedly enlarged. The perforation and slough were infolded with layers of Lambert sutures, and on account of the narrowing of the pyloric aperture I performed a posterior gastro-enterostomy at the same time. Drainage tubes were inserted locally, as well as above the pubes and in the right flank.

Recovery. Dismissed June 13th.

CASE VI.

W. J., a man aged 45, was admitted on September 10th, 1908. This patient was seen by Dr. Halkett, and sent in within a few hours of perforation.

On Admission.—His temperature was 96.4° F., pulse 64, respirations 28. He complained of dull aching pain in the left hypochondrium. There was absolute rigidity of both sides of the abdomen, with great tenderness in the epigastrium. No vomiting.

Previous History.—Heaviness in the stomach, and slight pain two hours after food, for the past week.

Operation four hours after perforation. On opening the abdomen both gas and fluid escaped. The pyloric end of the stomach was bound down by adhesions, and could not be raised up. A small perforation was found in the anterior wall of the duodenum, quite close to the pylorus. This was closed with a double layer of catgut sutures. Drainage tubes were inserted above the pubes and in both flanks, and a small gauze drain in the upper wound.

Recovery.

CASE VII.

P. W., a man aged 29, was admitted on September 15th, 1908, as a case of peritonitis of four days' duration. On September 10th, after a meal of cornflour, he was seized with sudden severe pain in the epigastrium, which doubled him up. The pain gradually got easier, but recurred on September 12th, and extended to the lower abdomen. Since September 13th pain had been constant under the right costal margin. He has not been sick nor vomited.

On Admission.—Temperature 101.4° F., pulse 100, respirations 22. He felt fairly comfortable but for the epigastric pain. The upper part of the right rectus is rigid, and here there is marked tenderness, and dullness to percussion.

Previous History.—For five years he has had discomfort and pain two hours after food, and three years ago had an attack similar to the present, but not so severe.

Operation.—I had no doubt that in this case there had been a rupture of a duodenal ulcer. Considering, however, that four days had elapsed, and the resulting mischief being quite localized, either because of previously formed adhesions or because the leakage was slight, immediate operation was not indicated. Anticipating the formation of a localized abscess, the patient was simply kept under observation. At the end of a week the abscess, which had increased much in size, was opened by a vertical incision and drained, a counter opening being made in the right flank.

Recovery slow but uneventful.

CASE VIII.

A. S., a woman aged 48, was admitted on September 21st, 1908. This, which proved to be a case of malignant tumour of the pylorus, is included in the series, because perforation took place with the usual acute symptoms, after being three days in the ward.

On Admission.—Temperature 98.4° F., pulse 120, respirations 24. The patient was very thin and pale and emaciated. She complained of soreness in the stomach region, but with no marked tenderness. The stomach was dilated, extending 1½ in. below the umbilicus, and exhibiting marked peristalsis and splashing. No tumour could be felt. She was put to bed for observation.

Three days after admission she cried out with sudden severe pain in the epigastrium, and became quite collapsed. She lay with her legs drawn up, the abdomen being very rigid and tender.

Previous History.—Indigestion for two years. Pain coming on half an hour after food for the past three months. Vomiting for the last month, sometimes the vomit being black. Stools at times black.

Operation three hours after rupture. A large quantity of dark brown bile-stained fluid escaped when the abdomen was opened. The stomach was much enlarged and hypertrophied. At the pylorus there was a hard cartilaginous mass as big as a Tangerine orange, having a large ragged opening the size of a florin in its centre. The tissue was so friable that the opening could not be satisfactorily closed. A posterior gastro-jejunostomy was performed, and drains inserted locally as well as suprapubically and in both flanks. Died a few hours later.

Pathological report: "A large fibrous mass with an adenocarcinoma invading it. Pancreatic tissue is included in the fibrous tissue."

CASE IX.

E. M., a woman aged 43, was admitted on December 11th, 1908. In the morning, while engaged in housework, she was suddenly seized with violent pain in the epigastrium, and

became very collapsed. No vomiting. When I saw her with Dr. King of Yoker, at 8 p.m., she had considerably improved; her temperature was 100° F. and pulse 106. There was marked abdominal rigidity, not much distension, and no diminution of liver dullness.

On admission to the infirmary two hours later, temperature was 102° F., pulse 124. Rigidity and tenderness were present all over the right side of the abdomen and in the left iliac region. Liver dullness had diminished.

Previous History.—Occasional sickness and pain after food for some years.

Operation thirteen hours after rupture. The abdomen contained a large amount of turbid fluid. A small perforation was found in the centre of a very hard ulcer, near the cardiac end of the lesser curvature of the stomach, and near the pylorus another doubtful area of stomach wall covered with adherent omentum. The perforation was closed in the usual way. The part near the pylorus was also infolded, and drains inserted above the pubes and in the left flank. The patient died two days later, during which time she was constantly troubled with hiccough, and vomited dark brown fluid.

CASE X.

J. B., a man aged 65, was admitted on August 14th, 1909. He had not been feeling well for ten days, but continued to work. Coming from work the previous night he felt a severe pain under the right ribs, accompanied by sickness and vomiting. He went to work again in the morning, but had to desist on account of a severe attack of pain, which made him fall down. Dr. Allan, who saw him then, sent him in for operation at once.

On Admission.—Temperature 98.2° F., pulse 64, respirations 16. The abdomen was rigid and tender, especially under the right costal margin, with pain also in the right shoulder.

Operation six hours after onset. On opening the abdomen air and fluid escaped. Just beyond the pylorus, on the anterior wall of the duodenum, was a well-defined perforation a quarter of an inch in diameter. Behind the bowel could be felt a hard mass, which I took to be a gland. The perforation was closed by Lambert sutures in the usual way, and drainage provided for above the pubes and in the right kidney pouch.

Recovery.

CASE XI.

A. T., a man aged 34, was admitted on September 18th, 1909. In the morning he complained of pain in the epigastric region. After his mid-day meal the pain became very severe, and Dr. Allan, who saw him, diagnosed a perforated ulcer.

On Admission.—Temperature 98.8° F., pulse 104, respirations 24. He looked and felt fairly well. The abdomen was rigid and slightly tender, and did not move with respiration. Both flanks were dull to percussion, and liver dullness had disappeared.

Previous History.—This patient had a gastro-jejunostomy performed for ulcer three and a half months ago by Dr. Dalziel. Since then he has been very well, and has gained 4 st. in weight.

Operation six hours after perforation. The abdomen contained a large amount of fluid. A perforation about a quarter of an inch in diameter was found in the anterior suture line of the gastro-jejunal junction, evidently a "peptic" ulcer. The perforation was closed by a double row of catgut stitches and the abdominal wound closed. A drainage tube was inserted above the pubes.

Recovery.

P.S.—This patient was readmitted to hospital on January 3rd, 1910, with a fresh perforation in the same situation, and is again making a good recovery.

THE DIAGNOSIS AND TREATMENT OF A COMMON FORM OF DYSPEPSIA AND OF EARLY TUBERCULOUS INFECTION IN CHILDREN.

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IN many cases of chronic dyspepsia in childhood the symptoms are sufficiently definite to settle the diagnosis, and the probability of a tuberculous infection lying at the root of the evil is not to be entertained.

There is, however, a type of case in which it is extremely difficult to say this is tuberculosis or this is dyspepsia, and an exact diagnosis in these cases is of great importance as leading up to a definite line of treatment. The subject is doubtless hackneyed, the theme a wide one, and the difficulties besetting it great; but owing to recent developments in the methods of diagnosis and treatment I am emboldened to record the impressions I have gained, the conclusions I have formed, and the results I have attained by adopting them in practice.

Chronic dyspepsia is a territory of medicine the boundaries of which are wide, the characteristics protean, the limits vague, and the etiology and pathology too often obscure; but with more precise methods of diagnosis at