Remarks ON SOME CLINICAL TYPES OF ABDOMINAL TUBERCULOSIS.*

BY
K. W. MONSARRAT, M.B., F.R.C.S.ED.,
LECTURER ON OPERATIVE SURGERY, UNIVERSITY OF
LIVERPOOL, ETC.

MUCH has been written on the subject of tuberculous peritonitis, and the limitations of the usefulness of surgical interference in the condition are well known. It is rather with the accidents or complications which arise in connexion with abdominal tuberculosis that surgery finds itself concerned.

It has been established by clinical experience that tuberculous peritonitis associated with massive exudation is favourably influenced by simple evacuation of the fluid; this drainage of the inflammatory area being followed by a reaction which arrests it if it does not cure the progress of the disease. Occasionally—very occasionally I think—in the course of this operation a primary focus of visceral disease is found and perhaps removed. This fortunate event has never happened to me, although I make it a practice to look for any obvious visceral disease in the abdomen and the pelvis. Of course, the bowel and mesentery can hardly be searched with any pretence to completeness. Clinical experience goes to show that the widespread exudative type of peritoneal infection is not commonly secondary to lesions of the bowel, mesentery, or tubes, at any rate not to gross disease in these situations; the probability is that it is in most cases primarily a blood-borne serous infection.

The Ileum.

The lower end of the ileum is the commonest site for the disease in the alimentary canal. Here the primary site is mucous, and necrosis and ulceration of the mucous membrane follow. Cases do not come to the notice of surgeons in the early stages of this type of the disease, and I should like confirmation or otherwise of the view that it is not often widespread; in other words, that tuberculous ulceration of the ileum usually concerns a small length of the bowel only, that it is a local disease, and rarely takes the form of a widespread florid infection.

The disease proceeds towards the peritoneal coat of the ileum, and a local tuberculous peritonitis results. Acute perforation is undoubtedly rare; I have met with one such case in a child of 4 years, admitted to hospital with acute peritoneal infection, in whom an ulcer in the ileum close to the caecum had perforated. It was associated with other ulcers in the ileum which *post-mortem* examination showed to be tuberculous.

The common event is a chronic penetration of the bowel wall by the disease, and following this a matting together of bowel surfaces occurs, which may be first revealed by obstruction.

The two following cases illustrate two alternative methods of dealing with the condition.

CASE I.—Obstruction of Ileum: Lateral Anastomosis.

A male patient, aged 15, was seized with acute general colicky pains on March 29th, 1911. He did not admit any symptoms of abdominal disease before this date. He vomited frequently during the night of onset, and these two symptoms—pain and vomiting—continued for three days until he was brought to hospital. He then had all the signs of acute intestinal obstruction, distended coils of bowel were plainly visible about the central part of the abdomen, the flanks being empty.

The abdomen was opened at the edge of the right rectus; distended ileum was traced to a matted mass of bowel covered with tuberculous deposit; the ileum beyond this mass was collapsed. A simple lateral anastomosis was made between bowel proximal and distal to the mass.

The further clinical progress was satisfactory, the temperature was apyrexia after the fourth day. The bowels acted naturally forty-eight hours after the operation.

This method simply avoids the disease and deals with the complication. A more direct way of dealing with both is illustrated by the following case.

CASE II.—Obstruction of Ileum: Excision of Mass of Tuberculous Bowel.

A female patient, aged 65, had had an umbilical hernia for eighteen years, and six years previously had had an operation for this. A week before admission to hospital she had an attack of acute pain in the night and vomited. The day following the bowels acted loosely four times. She did not vomit subsequently, but was nauseated. The bowels continued to act twice a day until the day of admission; on this day they did not act. A large ventral hernia was present in the situation of the operation scar. The part of this tumour to the right of the middle line was tense and tender, that to the left was soft and reducible.

An operation was performed on the day of admission. There were two distinct sacs, one on either side of the middle line: the small intestine occupying the left sac was healthy and reducible; the right sac was occupied by a matted mass of small bowel covered by tuberculous deposit. The sac wall was also infected. The whole mass was drawn forwards and removed between clamps. The intestinal ends were closed and invaginated and a lateral anastomosis performed. The hernial openings were repaired. This was a case of limited tuberculous ileal disease with obstruction in a hernial sac; there was no strangulation at the neck of the hernial sac.

The bowels acted naturally in thirty hours. Subsequently for a month she had some irregular pyrexia but her general condition remained good. The mass removed consisted of 2 ft. of small intestine, covered with tuberculous deposit, in part in the form of discrete tubercles but for the most part patches of coalesced tubercles matting the coils.

There was a mild degree of infection in the abdominal wound. Two months later an abscess formed under the scar which took eight weeks to heal. With this exception her recovery was satisfactory.

I do not think any law can be laid down as to whether exclusion or resection should be preferred in these cases of local ileal tuberculosis with obstruction, but obviously resection has great advantages over exclusion, in that it deals radically with the disease. The extent of bowel involved, the ease with which the mass can be isolated, will be guiding factors. The isolation of a mass which is not only matted by tuberculous disease but is also adherent to more or less distant coils is a precarious process. It is well known that separation of adhesions in a tuberculous abdomen is very liable to be followed by faecal fistula.

Caecum and Large Bowel.

The next most common seat of bowel tuberculosis is the caecum. Here, and at the other extremity of the colon, its pathological anatomy is different from the type in the ileum. Usually massive tumours are built up, the caecal wall becomes greatly thickened and infiltrated, and following, and in consequence of, this infiltration stenosis of the bowel lumen results.

Three cases, two of the caecum and one of the sigmoid colon, illustrate this type.

CASE III.—Tuberculosis of Caecum and Adjacent Parts of Small and Large Bowel: Section of Mass: Colostomy: Death from Pulmonary Phthisis.

A female patient, aged 36, was admitted to hospital complaining of pain in the right side of the abdomen. A tender swelling about the size of a kidney was to be felt in the right iliac region. She had a rigor on the day of admission. The pain had been present for three months, and was intermittent and associated with constipation. Two days after admission she had a severe attack of diarrhoea, the temperature rising to 102°.

On the fourth day the abdomen was opened and a mass exposed which involved the caecum, adjacent ascending colon, and six inches of the ileum. The whole mass was removed between clamps on the ileum and on the hepatic flexure of the colon and Paul's tubes fixed in each end of the gut. There was a good deal of shock, but she progressed fairly well, and a fortnight later an enterotomy was fixed to break down the spur preparatory to closure.

The mass removed was tuberculous; there was extensive ulceration in the region of the ileo-caecal valve and terminal ileum, and of the caecum and about four inches of the ascending colon; there were also many tuberculous glands in the mesentery in the angle between ileum and caecum.

The operation was done on August 30th; on October 9th the artificial anus was closed under local anaesthesia, and the bowels acted through the natural channels next day. By this time, however, phthisis had been demonstrated in the left lung, and her general condition was bad. She died eighteen days later. *Post-mortem* a large cavity surrounded by necrotic lung was found on the left side.

This operation of excision is severe, and in the presence of acute obstruction probably never advisable—certainly not if the patient is a child. The alternative is illustrated by the following case.

* A paper read to the Liverpool Medical Institution.

CASE IV.—Tuberculosis of Caecum: Lateral Anastomosis: Death from Pulmonary Tuberculosis.

A boy, aged 3, had been attacked every five days or so for several weeks before admission with vomiting and abdominal colic. The attacks were treated by enemata and aperients. The attack in consequence of which he was admitted was severe, the symptoms being again general abdominal pain, distension, and vomiting. He was in a medical ward at first, and was transferred later in consequence of the discovery of a tumour in the right iliac fossa.

On opening the abdomen the tumour was found to be caecum infiltrated with exudation due to active tuberculosis. A lateral anastomosis was made between ileum and transverse colon. The bowels moved with the aid of a simple enema on the fourth day.

The abdominal condition was relieved, but six weeks after his discharge from hospital he was readmitted with bronchopneumonia affecting the right lung. The condition spread from the right base to the whole of the lung, and was tuberculous. He died three months later from the pulmonary condition.

At the other end of the colon the disease also takes the form of a stenosing infiltration. In the following case, although the precise condition has not been demonstrated, I think there is no doubt as to the nature of the lesion.

CASE V.—Recurrent Attacks of Obstruction: Expectant Treatment.

A lady, aged about 40, was under treatment during 1913 for a tuberculous focus in the lung; the nature of the infection was demonstrated bacteriologically. In June of that year she was sent to me with the history that for the previous two months she had had several attacks of severe left-sided abdominal pain, the attacks being associated with vomiting and watery diarrhoea. They were intermittent, and for several days at a time she had no pain. The sigmoid colon in the left iliac fossa was palpable, tender, and infiltrated. She continued to have similar attacks, all associated with distension and vomiting; in the intervals mucus was often noticeable in the stools, but there was no history of any bloody discharge. Towards the end of the year chronic constipation became marked. During the early part of 1914 the attacks of definite intestinal obstruction continued; they lasted usually about twenty-four hours, and then subsided.

The question of operation was considered but not urged in consequence of her pulmonary condition. I have only recently seen her again. The condition of the colon appears to have become stationary; her general health is good, but she still suffers from recurrent attacks of obstruction, the severity of which, her friends say, she minimizes. They are all associated with vomiting, distension, and abdominal pain. There is still to be felt, just inside the left anterior superior spine, a swelling of the bowel about the size of the normal spleen, firm and moderately, not acutely, tender.

I think there is no doubt that in this case we have to do with a stenosing local tuberculous enteritis of the upper part of the sigmoid loop. A good result should be obtained by excision, but to this she will not at present agree.

Rectum.

In tuberculous disease of the rectum surgical treatment can do little; exclusion is impossible unless it takes the form of colostomy, and excision is out of the question. If the lesion goes on to abscess formation in the pelvis, as it not infrequently does, then the whole course of the disease may be favourably influenced by drainage. The following case is illustrative:

CASE VI.—Rectal Tuberculosis: Pelvic Abscess: Laparotomy: Improvement.

A young woman, aged 21, had been ill ten weeks before admission to hospital, the diagnosis being enteric fever. The symptoms throughout had been pain in the lower abdomen associated with diarrhoea. Occasionally the pain had been acute, and on two or three occasions she had vomited. For five weeks before admission she had had offensive vaginal discharge. The clinical course of the disease had therefore been subacute.

Five days after admission a sinus in the posterior fornix was demonstrated; it was enlarged with dressing forceps and a drainage tube inserted. There was considerable improvement after this, but diarrhoea persisted and also a nightly rise of temperature. For the next two months she remained in this condition, interrupted by a single rigor.

At the end of this time the abdomen was opened, and in the pelvis an abscess cavity with thick walls was demonstrated and drained. The discharge from this abscess persisted, and two months later the abdomen was reopened to the right of the sinus. After extensive dissection the abscess cavity was isolated, an adherent and damaged coil of small intestine being dealt with by suture. Scattered tuberculous deposits were present on the visceral and parietal peritoneum around. It was then clearly demonstrated that the primary focus of disease was rectal, and not tubal as had been thought probable. The cavity was scrubbed with iodoform paste and drained both above the pubis and through the vagina. The day after opera-

tion a faecal discharge came from the hypogastric wound, but the discharge was copious only for a short time. When she was discharged from hospital the house-surgeon's note says: "During the last few weeks patient's condition has improved considerably, and she has also begun to put on flesh. The fistula is almost healed, the wound only requires dressing once a day, and there is very little discharge."

Two and a half years later this patient came to hospital again with an abscess over the sacrum, which was opened. In the interval her health had been good, but recently the old sinus above the pubis had reopened, and there had also been some vaginal discharge. She complained of no pain except during the formation of the sacral abscess. There was some intermittent diarrhoea during her stay in hospital. Her later history I do not know.

Mesenteric Glands.

Without demonstrable intestinal lesions, the mesenteric glands are frequently the site of abdominal tuberculous disease. Frequently it is widespread; sometimes it is local, and when local it may be dealt with favourably by operation. A common site for a local deposit is the mesenteric angle between caecum and ileum. It happens to every one from time to time to meet with this condition, the diagnosis before operation being chronic appendicitis. Attacks of sharp darting pains, without any other symptom and with long intervals of freedom, associated with quite definite and localized tenderness about the caecum—these are the usual phenomena. It is good practice, I think, to remove such a gland group, but this means the most careful enucleation of the enlarged glands separately, and is both difficult and laborious. Before setting out on such a proceeding one should satisfy oneself that the disease is apparently local and capable of being dealt with completely. The alternative to enucleation is excision of a mesenteric segment with its glands together with the corresponding length of bowel.

CASE VII.—Excision of Tuberculous Mesenteric Glands.

A boy, aged 11, was admitted to hospital with the history that during the previous year he had had occasional attacks of colic, pain being about the centre of the abdomen. A week before admission he had had a severe attack, and again three days before, accompanied by vomiting. A tumour was at this time found in the abdomen; it measured 2 in. vertically and 3½ in. transversely and was situated just below and to the left of the umbilicus. It had irregular rounded margins and was freely movable with the hand.

Two days after admission the abdomen was opened in the middle line and the tumour was found to consist of a local mass of tuberculous mesenteric glands, the central part being a thick-walled abscess cavity to which omentum was adherent. The mass was removed entire together with 3 ft. of corresponding ileum and an end-to-end anastomosis was done. An attack of bronchitis complicated convalescence. The bowels acted forty-eight hours after operation. He was discharged five weeks later.

I have not included in this survey the simple stricture of the small intestine which results from the cicatrization of tuberculous ulceration for the reason that I have never met with a case demonstrably of this nature. Nor have I included the cases of intestinal obstruction due to strangulation by bands originating in tuberculous foci, because they are of fairly frequent occurrence and the problem is usually that of simple relief of the strangulation. I offer the following suggestions on the surgical treatment of the conditions described.

SUMMARY OF RECOMMENDATIONS.

1. When tuberculous disease, either of ileum or large bowel, is associated with definite intestinal obstruction, operation is always necessary, and the choice lies between exclusion by anastomosis and excision. If the obstruction is acute, exclusion by anastomosis is to be preferred; if the obstruction is subacute the exact local condition must decide: a mass that is easily isolated is better removed.

2. When such tuberculous bowel lesions are not associated with obstruction, or with an obstruction that is chronic and capable of relief by aperient, the advisability of operation will depend on whether the bowel disease is or is not the sole demonstrable lesion in the body. If the lung is also affected it will probably be wiser to decide against operation.

3. With regard to disease of the rectum I know of no actual evidence that a remedy is to be found in the establishment of an artificial anus. This has been recommended and practised on the ground that keeping the rectum empty affords a better prospect of resistance and recovery. I know at any rate of one instance in which this procedure added to the patient's discomfort without

obvious benefit to the rectal condition. Before recommending this method of treatment we should require a body of evidence that cure of the rectal disease can really be anticipated in a fair proportion of cases. When the rectum is affected above the peritoneal reflection, and is associated with abscess, evacuation of the abscess by the intraperitoneal route is to be recommended, but except for the treatment of this complication operation has no service to offer.

4. Lastly, in selected cases, operation gives good results in limited tuberculous disease of mesenteric glands. According to the extent and stage of the focus this will take the form either of enucleation or of excision of the mesentery involved, together with associated bowel.

SPHENOIDAL EMPYEMA AND EPIDEMIC CEREBRO-SPINAL FEVER.*

BY

DENNIS EMBLETON, M.A., M.B.,

BACTERIOLOGIST TO UNIVERSITY COLLEGE HOSPITAL.

THERE are four varieties of the clinical course taken by cerebro-spinal fever.

First, there is the type which, commencing as an acute illness, may then go on to recovery or may result in death.

There is, secondly, the type of case that, after having shown considerable improvement from the acute stage, suffers from a recrudescence, both in general symptoms and in the condition of the cerebro-spinal fluid. This usually occurs from the fifth to the twelfth day, and may subsequently lead to recovery or death.

Thirdly, there is the type of case that, after convalescence from the acute stage, still retains a tendency to suffer from malaise, headaches, and vomiting, which gradually become more pronounced. The patient becomes extremely emaciated and death occurs from hydrocephalus.

Fourthly, there is the case that, having entirely recovered from the preliminary attack, months later has a relapse which may prove fatal.

Thirty-four *post-mortem* examinations were made in the Netley district between 1915 and 1919, on cases of cerebro-spinal fever dying as a result of one of these four types of the disease. These are all grouped in the accompanying tables under three of these types:

- A. Those dying during the acute illness ... 21 cases
B. Those dying during a recrudescence ... 6 "
C. Those dying from hydrocephalus during convalescence ... 7 "

One case only (22) died as a result of a relapse occurring months after the preliminary attack, but as he suffered from an apparently typical attack of the disease with a recrudescence he is grouped under heading B for convenience.

Of these 34 deaths only 11 occurred within the first week of illness. In this observation we differ from Rolleston, who states that "more than half the fatal cases occur during the first week of the disease." A possible explanation of this difference is that at Netley we were fortunately able to insist that every case in which the least suspicion of cerebro-spinal fever was entertained should be immediately admitted to the isolation hospital. On admission, lumbar puncture was performed as a routine within a few minutes of arrival, antimeningococcic serum being administered there and then to cases showing turbid cerebro-spinal fluid. A bacteriological diagnosis was only waited for when there was middle-ear disease or a head wound. This very early administration of serum, often within an hour or two only of the suspicion of cerebro-spinal fever being present, probably saved many cases who would otherwise have died during the first week.

In a previous paper² it was shown that of 36 cases in which it was possible to obtain cultures from both the nose and the cerebro-spinal fluid, in 35 the types of meningococci in the two sites were identical, as proved by both agglutination and saturation tests. The irregularity shown by the remaining case has been discussed.

In no case was any inflammatory process discoverable about the cribriform plate of the ethmoid by naked-eye examination. The contents of the pituitary fossa showed

TABLE I.—A. *Acute Cases.*

No. of Case.	Days from Onset to Death.	C.S.F. Type.	Nasal Type.	Sphenoidal Sinus.		Sphenoidal Bone.	
				Empyema.	Meningo-cocci.	Inflam-mation.	Meningo-cocci.
1	1	N.O.	N.O.	Serous effusion	Not found	Nil	—
2	1	II	N.O.	Yes	Not found	Yes	Not found
3	2	II	N.O.	Yes	II	Nil	—
4	2	II	II	Yes	II	Nil	—
5	3	Pos.	Pos.	Yes	Pos.	Yes	Pos.
6	3	Pos.	Pos.	Yes	Not found	Nil	—
7	3	II	N.O.	Serous effusion	II	Nil	—
8	3	I	I	Yes	Mening.	Yes	Not found
9	4	I	N.O.	Yes	Mening.	Nil	—
10	5	Pos.	N.O.	Yes	Not found	Nil	—
11	7	Pos.	N.O.	Yes	Not found	Nil	—
12	9	I	I	Yes	I	Nil	—
13	10	Pos.	Pos.	Yes	Not found	Yes	Not found
14	11	I	N.O.	Yes	Not found	Nil	—
15	16	II	II	Yes	Mening.	Yes	II
16	19	Pos.	N.O.	Yes	Mening.	Nil	—
17	27	III	N.O.	Normal	—	Nil	—
18	34	Pos.	Pos.	Yes	Pos.	Yes	Pos.
19	40	Pos.	N.O.	Yes	Not found	Nil	—
20	47	Pos.	Pos.	Yes	Not found	Nil	—
21	68	Pos.	N.O.	Yes	Mening.	Yes	Not found

N.O. = Culture not obtained. Roman numerals denote Gordon's four types of meningococcus as proved by serological tests. Pos. = Meningococcus grown, but serological tests not performed. Mening. = Organism having the morphological and staining characteristics of the meningococcus seen, but not grown.

TABLE II.—B. *Cases with Known Recrudescences.*

No. of Case.	No. of Days to		C. S. F. Type.	Nasal Type.	Sphenoidal Sinus.		Sphenoidal Bone.	
	R.	D.			Empyema.	Meningo-cocci.	Inflam-mation.	Meningo-cocci.
22	8	8	II	II	Yes	Mening.	Nil	—
23	5	9	I	I	Yes	I	Nil	—
24	9	14	I	I	Yes	I	Nil	—
25	12	16	III	I or III	Yes	Mening.	Nil	—
26	42	48	II	N.O.	Normal	—	Nil	—
27	Rr.	99	Pos.	Pos.	Yes	Mening.	Nil	—

R. = Recrudescence. Rr. = Repeated recrudescence. D. = Death.

TABLE III.—C. *Convalescent Cases Dying from Hydrocephalus.*

No. of Case.	Days from Onset to Death.	C. S. F. Type.	Nasal Type.	Sphenoidal Sinus.		Sphenoid Bone.	
				Empyema.	Meningo-cocci.	Inflam-mation.	Meningo-cocci.
28	87	Pos.	II	Yes	Not found	Nil	—
29	90	Pos.	Pos.	Yes	Mening.	Nil	—
30	93	II	II	Yes	II	Nil	—
31	109	Pos.	N.O.	Yes	Mening.	Nil	—
32	133	Pos.	I	Yes	I	Nil	—
33	147	Pos.	II	Yes	Not found	Nil	—
34	199	I	I	Yes	Not found	Nil	—

Note.—In no case was the cribriform plate of the ethmoid affected. The contents of the pituitary fossa were inflamed in every case. In Case 8 there was inflammation of the middle ear, and in Case 9 pus; in all other cases the ear was not affected.

* A paper read before the Pathological Section of the Royal Society of Medicine.