or the shadows thrown are similar to those obtained in many different pathological conditions, or the lesion may come behind the heart shadow. The first two points are demonstrated in Case I. Here the physical signs were like those of chronic tuberculosis, and the radiogram could be interpreted in various ways. Lipiodol injections proved the condition to be bronchiectasis. Frequently constant clicking râles are heard at one or both bases. If these are due to bronchiectasis we believe that proof positive can be obtained by the use of lipiodol.

Lipiodol will flow into a tuberculous cavity and outline it or fill it; but as a rule such cavities are obvious on the ordinary radiogram. It would be of value, however, in differentiating a large superficial tuberculous cavity from a localized pneumothorax. We have avoided injecting tuberculous cases as far as possible owing to unfavourable reactions having been reported.

Limitations.

Is there any other picture obtained after lipiodol injection which can be considered unequivocally pathognomonic? The answer is doubtful. Fig. 5 shows the picture obtained in a case of apparent chronic bronchitis and emphysema, and it is in accordance with the appearance described by the French writers on the subject. Frequently the information obtained is of a negative character. In cases of lung abscess and old empyema cavity it has been our experience that the lipiodol stops short at the periphery of the diseased area. This is shown in Fig. 6 (Case IV). We have seen the same thing in other cases.

Apparently, therefore, it would not help us to distinguish between a superficial non-tuberculous lung cavity and a localized pneumothorax, or between a pulmonary abscess and an old empyema cavity. What is obtained, however, is the knowledge that bronchiectasis does not exist, and this may be of value both in diagnosis and treatment. In Case IV lipiodol was also injected through the drainage tube into the abscess cavity; it outlined the lower part of the cavity, and this was all. None appeared to go through the bronchi.

We have injected lipiodol in cases of new growth of the lung, old empyema cavity, tuberculosis, and other conditions mentioned above, but apart from the filling of a tuberculous cavity no special help was given, nor did we obtain what may be called a pathognomonic picture. By this we do not mean to suggest that the method has failed. With an enlarged experience, both in the number of cases and in interpretation, more knowledge may be obtained. It would seem that a distortion or misplacement of a bronchus ought to be made manifest. All that we say is that, except in the cases mentioned, we have not hitherto obtained any strikingly helpful radiograms. Case VI, however, certainly gave a distinctive picture, but though tending to confirm a tentative diagnosis based on inferential reasoning, it did not give positive evidence of the actual underlying cause of the condition.

Summary.

1. Lipiodol injection will apparently enable us to diagnose and localize bronchiectatic dilatations with certainty: moreover, in many cases it is the only method of proving the diagnosis.
2. It enables us to distinguish bronchiectasis from lung abscess, from empyema with a broncho-pleural fistula, and from tuberculosis.
3. With regard to the diagnosis of lung abscess and empyema with a pleural fistula, the help is of a negative character. The lipiodol does not appear to enter the pulmonary abscess, but stops short of it; nor does it easily flow through the bronchial fistula into an empyema cavity.
4. Tuberculous cavities fill readily, but it has been suggested that injections are undesirable in cases of pulmonary tuberculosis.
5. In our opinion the method described is simple and harmless, giving invaluable help in certain cases, but possessing limitations.

We are indebted to Drs. Leggett, J. V. Sparkes, and Russell Reynolds for the skiagrams, especially to Dr. Sparkes, by whom most of the radiological work was done.

"VOLVULUS NEONATORUM."

BY

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THE following case appears worthy of record, as it is, so far as I know, the first of its kind to be recognized from clinical observation and to be successfully treated by operation. The case was one of the disease which I described in 1923 as "volvulus neonatorum." In this condition the normal rotation of the midgut fails to occur during development. In consequence of this the mesentery fails to acquire its secondary attachment to the posterior abdominal wall, and the entire small intestine and right half of the colon depend as a mass from a narrow pedicle at the origin of the superior mesenteric artery. The condition obviously predisposes to a volvulus of this enormous extent of bowel. The accident usually occurs within a few days of birth—probably as a result of the first peristaltic efforts of the intestine in response to feeding. The volvulus is peculiar in that the third part of the duodenum is acutely obstructed by being tightly twisted round the pedicle while the less fixed colon does not suffer. Since the involved bowel has a free exit below through the colon, it does not become distended, but collapsed. The blood supply is but slightly impaired, causing only a moderate cyanosis of the intestinal coils.

Of the diagnosis I wrote as follows:

"In these cases I think a correct diagnosis is . . . possible . . . The child is apparently normal when born and remains so for some days. Meconium is passed, and if the onset of the volvulus has allowed time, food residue appears in the motions in due course on the third or fourth day. With the onset of volvulus there may be shock, though this was observed in one case only. Vomiting begins early . . . The vomit is soon deeply stained with bile, for the obstruction lies below the duodenal papilla. . . . The upper half of the abdomen becomes distended by the stomach and duodenum, while the lower part becomes recessed from collapse of the intestines. . . . Melaena may or may not be evident."

It was pointed out that the above syndrome defined the condition clearly from all other possible causes of alimentary obstruction of the first few weeks of life. It was suggested "that reduction of the volvulus would be the most hopeful line of treatment. The intestinal mass would have to be delivered and untwisted."

A female infant, aged 8 days, was admitted to the Royal Edinburgh Hospital for Sick Children on May 20th, 1926, having been referred to us by Dr. Sharp of Musselburgh on account of intestinal obstruction. The birth was natural. Abundant meconium passed. Natural light yellow food residue appeared in the motions on the third day, and a normal motion was passed on the morning of the fourth day. The baby took the breast well until the fourth day, when she had a sudden fit of crying, holding the breath, drawing up the legs—apparent abdominal pain. There was no pallor. From this time she refused to suck. She vomited with increasing frequency, at first clear fluid, then yellowish, and latterly dark green flaky material. There had been complete constipation. There was little further pain until the morning of admission, when it seemed to recur and persist. On the morning of admission a small quantity of blood-stained mucus was passed per anum.

Examination.—A well developed infant; the eyes sunken, the mouth dry, the face drawn, and the skin generally lax and folded from rapid dehydration. A severe degree of toxæmia was obviously present. The upper part of the abdomen was prominent from gastric and duodenal dilatation, the lower part was flat. Small quantities of dark green flaky material were regurgitated at intervals of a few minutes. The rectum contained traces of blood-stained mucus.

Provisional Diagnosis.—From the clearly defined sequence of events of the history, and the facts observed on examination, a confident diagnosis of "volvulus neonatorum" secondary to an error of intestinal rotation and fixation was made. It will be noted that this was based on evidence of acute obstruction to the duodenum below the bile papilla and of post-natal origin.

A large continuous subcutaneous infusion of glucose-saline solution was administered, operation being postponed for four hours in order to re-establish the fluid and carbohydrate equilibrium.

Operation.—Ether anaesthesia. Right paramedian incision. The stomach and duodenum were enormously distended with fluid and gas, the pylorus being widely dilated. The distension ended abruptly where the third part of the duodenum crossed in front of the superior mesenteric vessels and was sharply twisted round them in a clockwise direction. In this case the caecum had crossed the mid-line from left to right and was loosely adherent over the right kidney (incomplete or "mal-rotation"). The lowest coil of the ileum with its free mesentery was loosely

wound around the pedicle of the volvulus and was free from constriction. The entire jejunum and ileum were implicated in the volvulus. They presented an extraordinary appearance, being deeply cyanosed, quite collapsed and empty, and massed into a compact bunch, which depended freely from the narrow pedicle of the superior mesenteric axis. The mass of congested, collapsed bowel could be most accurately likened to a conglomeration of bluish earthworms. The mass was rotated in an anti-clockwise direction through about 360 degrees. A few light, recent adhesions were present about the constricted portion of the duodenum; these were readily separated and permitted the organ to come into its natural position behind the mesenteric root. So soon as the constriction of the duodenum was relieved by untwisting the volvulus, the gaseous and fluid contents of the dilated stomach and upper duodenum passed rapidly down the jejunum and had entered the ileum before the bowels could be returned to the abdomen. Since the infant was seriously ill from four days of acute duodenal obstruction, it was thought unwise to prolong the operation by fixing the replaced intestines. It was hoped that this would occur naturally in the course of post-natal development. The abdomen was closed. The operation had been a very easy and rapid one.

Progress.—No further vomiting occurred, and the infant took the bottle well within three hours of operation. An uninterrupted convalescence ensued and she was discharged from hospital on the fourteenth day. She has been seen at regular intervals since. She has progressed quite normally; there has been no vomiting, no evidence of abdominal pain, and a steady gain in weight. At the last report (November 23rd, 1926) the child appears a particularly robust little girl of 6 months, weighing 12 lb. 12 oz.

I regard this case with peculiar satisfaction, as it represents to me the outcome of former embryological and pathological researches in practical diagnosis and operative cure.

REFERENCE.

¹ N. M. Dott: Anomalies of Intestinal Rotation: their Embryology and Surgical Aspects: with report of five cases. *Brit. Journ. Surg.*, 1923, xi, 251-286.

HAEMATURIA FOLLOWING INSULIN INJECTIONS.

BY

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IN 1923 and 1924 I noted several cases of diabetes mellitus in which the use of insulin injected in the usual manner was associated with a transient haematuria. I could not trace any records of similar cases, and on inquiry of other physicians who had a large experience of insulin administration I did not get any corroborative information. While noting the facts I decided to await further confirmation, as apparently the occurrences were simply coincident and of no serious moment. Since then, over many hundreds of similar injections in private and hospital practice, and in many cases with large daily doses, I have never met with a similar experience. I have also been watching the literature of the subject for any reference to the occurrence of haematuria in similar circumstances, but without avail till in the *Epitome* of the BRITISH MEDICAL JOURNAL of October 23rd, 1926 (para. 364), I found J. Gudemann reported as having described a case of haematuria following insulin treatment. As the history of the case was there given it need not be repeated here. Gudemann referred to two other cases, and stated that all his own cases of haemorrhage after insulin treatment occurred in a period of four and a half years; he thinks it probable that haemorrhages after insulin treatment occur more frequently than has been believed hitherto.

As such occurrences have not apparently been noted in this country I wish to refer to three cases, in all of which a very transient haematuria was observed.

CASE I.

A boy, aged 13, was admitted to my ward on October 23rd, 1923, in a state of coma, and on that day he had 20 units of insulin on two occasions. He made a rapid recovery from coma, and next day felt very well, though he had very decided haematuria. Microscopic examination of the urine showed, in addition to blood corpuscles, a few hyaline casts. The haematuria cleared up completely within twenty-four hours, and did not recur, though he had regular daily doses of insulin during the remainder of his residence. He is still under regular supervision at intervals, and though regular doses of insulin have been given, no similar occurrence has been observed. He is well developed and sturdy.

CASE II.

A man, aged 32, with advanced diabetes, had three attacks of haematuria during one month. He started insulin treatment in my ward on September 20th, 1923, and was at one time having 50 units daily. He developed severe haematuria on October 30th, and had recurrences on November 5th and November 27th. On each occasion the attack persisted for a few days, was not associated with any discomfort or signs of kidney disease, and cleared up completely.

CASE III.

A man, aged 59, had marked diabetes, requiring a daily dose of 40 units over a prolonged period. In May, 1924, in a nursing home, he had an attack of haematuria lasting twenty-four hours. Here also there were no associated symptoms of renal disease, and no feelings of discomfort.

I am tempted to add a fourth case of haemorrhage in similar circumstances, though it was not haematuria.

The patient was a man, aged 73, who had suffered from diabetes some time, but had not had insulin. When I saw him with his doctor on June 8th, 1924, he was on the verge of coma and became comatose before he reached the nursing home. With insulin in considerable doses he recovered consciousness completely, but four days thereafter he had a cerebral haemorrhage, with resultant hemiplegia, and died.

These cases all occurred within a period of about eight months, and, it is of interest to note, rather earlier than those referred to by Gudemann. I have no explanation to offer as to the cause of such haemorrhage, as the conditions of administration of the drug were at all times as nearly as possible the same, and, of course, in the cases in the ward others were having the same insulin without any haemorrhage. It would be interesting to know if other examples are on record of similar occurrences during insulin administration.

STUDY OF AN ANAEROBIC STREPTOCOCCUS.

BY

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ANAEROBIC streptococci have been described before, and according to Douglas's observations they were sufficiently common in war wounds to render anaerobic culture of pus so obtained a matter of practical importance.¹ But the occurrence of these organisms in civil practice in England is sufficiently rare to justify record.

The streptococcus now described was isolated from an abscess in the lumbar region. The films showed chains of eight to ten cocci; no other organism was seen, and an examination for tubercle bacilli by the Ellermann and Erlandsen concentration method was negative.

Cultural Features.

A serum nutrient agar slope was inoculated, but no growth followed. As it was assumed that the inoculation was at fault a second slope was used, with a like result. The pus was then put on a "plain" agar plate and incubated anaerobically. A profuse growth was obtained in eighteen hours. The colonies were round, discrete, and about 0.5 μ in diameter. On inoculating a slope from this plate and incubating it aerobically no growth was obtained. The anaerobic subcultures grew well. An aerobic culture made from the fifth anaerobic culture showed a feeble growth in twenty-four hours which did not improve with further incubation. This was the only aerobic culture obtained, as attempts to repeat aerobic cultivation from later anaerobic subcultures have all failed. The addition of serum to the agar plates does not seem to influence the growth. In plain agar slabs and in gelatin at 22° C. the organism grows as a granular line along the length of the stab. The gelatin is not liquefied.

It should be explained that unless otherwise stated all further descriptions of growth and fermentative reactions refer to anaerobic cultivation.

The organism rapidly lost its chain formation in artificial cultivation, and so was tested in tomato extract media.² A tube of tomato broth was inoculated from a nutrient beef broth culture that showed clumps only in films made from it. Next morning a thick turbidity was present in the tomato broth, and a film showed nothing but chains of 12 to 16 cocci. The same result was obtained with a tomato slope, except that the chains were a little shorter. The thickness of the growth in the broth and on the slopes has since proved that tomato extract is much the best medium for cultivating the organism. The individual cocci do not show any great tendency to produce involution forms. The organism is, of course, Gram-positive.

Fermentative Reactions.

No gas was produced with any sugar, but the acid production, when obtained, was sharp, appeared within twenty-four hours, and did not change with further incubation up to five days. Acid was