vaccination, the tuberculin-testing survey has been found of very great interest, and we regard it as of very great help in our ordinary anti-tuberculosis work.

One impression formed during the year is that the tubercle bacillus is not so prevalent or ubiquitous as we had formerly supposed, that when it settles it "stays put," but that where it does "stay put" it invariably makes its presence known by positive reactors in its neighbourhood.

In some rural schools not one single reactor was found, and where schools showed more than an average percentage of positives open cases were present in the area or there was a very strong indication to us to seek the source in the immediate neighbourhood.

From our work during the year we have learnt that in future when we come across a positive reactor it will be our duty to try to trace the source, and, while this may be impossible in the towns, it should be possible in rural areas. We should not, as we formerly did, regard a positive reaction as the expected and universal result, but as an indication that the reactor got his tuberculin sensitivity from an open case of pulmonary tuberculosis; and, if we have no suspicion already about the source, that open case should be located. The younger the reactor the more restricted will be his environment and the more limited the search. In the continued campaign in this county in one week, out of 387 persons aged from 6 months to 35 years 34 reactors to the full series of tests were found. This of course was in a rural area. There has not been time to study this series properly, but for the purposes of this paper a hasty analysis of the data from their record sheets has been made, with some interesting results. Of the 34 reactors three are contacts to already known cases, and nine, all of them with the exception of one 8-year-old over 10 years of age, are isolated cases—that is, one case to each household. In the latter cases there would be very little possibility of tracing the source of infection. The remaining 22 cases are grouped in a significant manner: There are two homes with three reactors and eight homes with two. The age incidence of some of those groups are: $2\frac{1}{2}$ and $3\frac{1}{2}$; 3.7 and 9; 10.6, 13.6, and 16; 7 and 9 years. It is felt that thorough investigation in those homes would be well worth while. Those children have either obtained their sensitivity from an open case in their immediate neighbourhood or they are victims of a bovine infection. In either instance the discovery of the source of the infection should not be impossible in some of these cases. Because of the number of persons over 50 (three of them between 65 and 70) diagnosed as open cases in the last few years, particular attention will be paid to the old bronchitics and chronic coughers who are so common in rural areas. Filming and sputum examination in those cases will, it is thought, pay higher dividends than the mere x-raying of reactors. This was tried fairly extensively last year, with the result that very little treatment was indicated except in the case of very young children. We expect a visit soon from a mass radiology unit, and this should complete a rounded campaign.

It should be said in conclusion that the opinions and impressions noted in this article are personal to me, and are not necessarily shared by the National B.C.G. Committee or its medical personnel.

The grateful thanks of the County Public Health Department are due to the National B.C.G. Committee, St. Ultan's Hospital, Dublin, and their officials, Dr. J. St. P. Cowell, Medical Director,

Dr. P. Alston, and Dr. B. Scallan, who of course are responsible for all the work detailed above, the writer acting merely as organizer and enthusiastic supporter. Thanks are also due to Dr. Michael Kirby, County Medical Officer of Health, for permission to publish this article, to Dr. Kirby and Dr. Cowell for generous co-operation in compiling it, and to our nursing and clerical staff, on whom the heavy work of the whole county campaign fell.

ADDENDUM.—Since the preparation of this paper the committee has completed its programme for the county, and its members have visited every district and school. In all, 11,786 children under 15 years of age have been tested. Of these, 10.9% were positive, and 8,735 were vaccinated. 2,616 persons over 15 years old were tested. Of these, 28.9% were positive and 1,364 were vaccinated. A small portion of those vaccinated have not yet had a post-vaccinal test, but of those who have had it 95% were positive after the six-weeks or eight-weeks interval: these of course were revaccinated. For the purposes of this paper a small number of cases (140) vaccinated in March, 1950, were tested after 15 months' interval, and 97% of these were still positive. A complete list of all positive reactors in the different dispensary areas has been circulated to the medical officers concerned, and especial attention drawn to households with two or more cases. This knowledge should prove of great value to the doctor in future dealings with his district.

REFERENCES

- Dick, W. Pointon (1950). *British Medical Journal*, **2**, 141.
Rich, A. R. (1944). *The Pathogenesis of Tuberculosis*. Thomas, Baltimore.
Scallan, B. F. (1951). *J. Irish med. Ass.*, **28**, 49.

CONGENITAL DUPLICATIONS OF THE SMALL INTESTINE

BY

J. C. BARRETT, F.R.C.S.

Senior Surgeon, Leicester Royal Infirmary

Duplications of the small intestine are uncommon, and may be of spherical or tubular shape. The spherical cyst must be distinguished from a Meckel's diverticulum, which is due to the persistence of the vitelline duct, and from other minute diverticula. These arise from the epithelium lining the intestine, and grow into the sub-epithelial connective tissue, and come to lie principally on the antimesenteric side of the intestine. The spherical duplication cysts are situated between the layers of the mesentery, on the mesenteric side of the intestine. These cysts must also be distinguished from the thin-walled mesenteric cysts of lymphangiomatous origin, whereas the duplication cysts have thick walls containing all layers of the small intestine. The former can be separated easily from the small intestine, and the latter only with difficulty.

Summaries of recorded cases have been made by Nor-mark (1937), and by Bremer (1944), and Ladd and Gross (1940) described a series of 18 personal cases. Recently Wooller (1950) described one case of the cystic type, and Aitken (1950) recorded a very rare case of duplication of the intestine from a Meckel's diverticulum to the anal canal.

Two cases of this condition have been operated upon in the Leicester Royal Infirmary in the last five years, one being of the tubular type, and one of both cystic and tubular type. Dr. E. M. Ward, the senior pathologist,

has also noted one case of the tubular condition found at the post-mortem examination of a child who died from tuberculous meningitis.

Case 1

A female infant aged 5 months was admitted to hospital on October 2, 1949, under Dr. J. C. V. Braithwaite, whose diagnosis was "haemorrhage from a gastric ulcer of a Meckel's diverticulum." The child had always been well, but that evening she passed a fair amount of bright-red blood about 8.30 and thereafter cried a lot. The bowels were not open at this time.

On admission she appeared to be a well-nourished baby, and was apparently contented, although definitely anaemic. No abnormality could be found on abdominal or rectal examination, but a small quantity of dark blood followed withdrawal of the finger. There was no mucus. On October 3 there was further rectal haemorrhage, with some bright blood in a black stool. The haemoglobin was 47%. A whole-blood transfusion of 120 ml. was given into the external jugular vein. Next day the haemoglobin was 57%. Melaena occurred on two occasions on the 5th. The case was referred to me on October 6 with a view to surgical treatment. Sigmoidoscopy on the 7th revealed nothing abnormal in the lower 5 in. (12.5 cm.) of the bowel. Further melaena occurred on the 8th, and on the 10th the haemoglobin was 64%. A further transfusion of packed cells (130 ml.) was given into a scalp vein on October 13. At operation on October 14 the small intestine was found to be duplicated in the lower ileum at a point 6 in. (15 cm.) from the ileo-caecal valve. The duplication extended proximally for about 8 in. (20 cm.), where it ended in a blind pouch; 1½ in. (3.75 cm.) from the point at which the duplication joined the normal intestine there was a hard ulcer-like mass. The bowel was resected and the lumen restored by an end-to-end anastomosis.

Post-operative progress was uneventful, the bowels being open normally on October 17. The child made a complete recovery, and x-ray examination of the chest showed no abnormality.

Pathology (Dr. E. M. Ward).—"The specimen consists of a loop of small intestine, on the mesenteric attachment of which there is a second loop approximately 7 in. (17.5 cm.) long, and with a similar diameter. There is an opening into this internal loop ¼ in. (0.6 cm.) in diameter. On dissection of the internal loop it is seen that the mucosa has the macroscopic appearance of gastric mucosa; 1½ in. (3.75 cm.) from the point where this loop joins the main portion of bowel there is a subacute ulcer which almost perforates into the main bowel."

Histology.—"Examination confirms that the lining of the second loop is gastric mucosa, and the ulcer is shown as a typical subacute peptic ulcer."

Case 2

A female infant aged 3 weeks was admitted to hospital on June 22, 1944, under Dr. J. C. V. Braithwaite, with a history of vomiting since leaving the nursing-home, the date of which was not given, although it was presumably 14 days after birth. The bowels had been open daily. The child was a full-term first baby, the birth weight being 8 lb. 6 oz. (3.8 kg.). The abdomen was distended, with violent visible peristalsis, associated with screaming and drawing up of the legs. A firm swelling was palpable on the left side of the abdomen, apparently coming from the left loin. Hb was 98%. The pre-operative diagnosis was a polycystic kidney or mesenteric cyst.

Operation.—On June 27 Mr. E. R. Frizelle operated through a right paramedian incision. Collapsed small intestine presented in the wound on opening the peritoneum, and there was a cystic swelling to the left of the midline. The cyst was aspirated and delivered to the surface, being followed by distended small intestine. The cyst, which was 4 in. (10 cm.) in diameter, was in the mesentery of the small

intestine about half-way down the ileum. It was close to the bowel wall at one point, but no definite attachment was demonstrated. The vessels to the adjacent ileum coursed over the cyst. There were two areas of reduplication of the small intestine, one above and one below the cyst. The upper reduplicated area was 18 in. (45 cm.) in length. The accessory portion was dilated, but had no connexion with the ileum. There was a similar accessory dilated portion of the terminal ileum 18 in. in length running along a collapsed ileum up to the caecum, and at one point the finger could be passed between the distended and collapsed adjacent coils. This distended portion was anastomosed to the caecum in one layer. There was a small-bowel obstruction due to the intestine having been twisted by the cyst. This twist was relieved. A tube was inserted into the cyst, which was fixed to the anterior abdominal wall by a catgut stitch. The wound was closed in layers around this tube.

The child made a slow recovery, and was discharged from hospital with normal bowel function on July 28. She was, however, readmitted shortly afterwards, and died on August 4 from apparently acute intestinal obstruction. The post-mortem record of this case is unfortunately not available.

Case 3

This patient was a boy aged 2½ years. Necropsy was carried out on October 11, 1949, by Dr. E. M. Ward, who reported as follows. "The brain shows typical tuberculous meningitis, together with vascular stasis. There are no intracerebral tubercles." A primary focus was present in the lower lobe of the right lung, with associated tuberculous lymph nodes in the hilum of the lung and at the bifurcation of the trachea. Abdomen: situated about 3 ft. (91 cm.) from the ileo-caecal junction is a portion of double small bowel, 6 in. (15 cm.) in length. The second loop is attached to the mesenteric border of the ileum and opens into normal bowel at the lower end. There is no evidence of secretory retention or of inflammation."

Discussion

These conditions have been very fully described by Ladd and Gross (1940), who group the cystic lesions which may occur along various points of the alimentary canal under the heading of "duplications of the alimentary tract" (enterogenous cysts, enteric cysts, or ileum duplex). Their suggestion regarding the aetiology is "that they are primarily produced by pinching off a small bud from the gut wall, with development of the segregated tissue into a cystic structure adjacent to the normal intestine."

Bremer (1944) reviewed the literature. He considered that the group of anomalies comprising enterogenous cysts, intestinal duplications, and the like is divisible into two smaller classes on the basis of embryological origin.

Normark (1937) emphasizes the association of enterogenous cysts of the chest in these cases of congenital duplication of the small intestine. The mucosal heterotopia in these cases has not been satisfactorily explained.

Clinical Features.—The cases described above well illustrate the different manner in which these cases may present. Case 1 showed the type with melaena or severe rectal haemorrhage in an infant or young child. Case 2 showed the more severe type, presenting with symptoms and signs of intestinal obstruction. This case also illustrates the multiplicity of lesions that may be present and the extreme difficulty of treatment in such a case. Case 3, so far as is known, had shown no evidence of the condition up to the time of death from a second pathological condition. In Case 1 there was no radiological evidence of an enterogenous cyst of the chest, and no such cyst was found at necropsy in Case 3.

Summary

Three further cases of congenital duplication of the small intestine are recorded, and attention is drawn to the association of the condition with enterogenous cysts of the chest.

REFERENCES

- Aitken, J. (1950). *Brit. J. Surg.*, **37**, 349.
 Bremer, J. J. (1944). *Arch. Path.*, **38**, 132.
 Ladd, W. E., and Gross, R. E. (1940). *Surg. Gynec. Obstet.*, **70**, 295.
 Normark, A. (1937). *Acta paediatr., Stockh.*, **20**, 475.
 Wooller, G. H. (1950). *Brit. J. Surg.*, **37**, 356.

Medical Memoranda

Restoration of Speech in Severe Aphasia by Intravenous and Oral Priscol

The following case is of interest because of the temporary but extraordinary efficacy of "priscol" (tolazoline), and because, although many papers have emphasized the value of priscol in peripheral vascular states, none has been concerned with the effect of the drug on the cerebrovascular system.

Case Report

A man aged 55 was admitted to Barrow Hospital in November, 1950, in a state of agitation. Depressive episodes had occurred before and had necessitated at least four periods in various hospitals and nursing-homes. Together with the agitation and depression he showed a mixed type of aphasia, mainly motor, with almost complete agraphia. He was unable to find words to express his needs, although by gesture he usually made himself understood. He was also able to respond by actions to commands, whether given verbally or in writing. There was no clouding of consciousness. Perseveration in speech was marked, and it was quite clear that the inability to write his requirements occasioned him great upset, and after a few attempts he usually lay back in bed, the picture of tearful misery and distress.

He was of athletic habitus, with good nutrition, showing marked peripheral arteriosclerosis and a retinopathy of about Grade II significance (Wagner and Keith). Serial blood-pressure readings showed a mean of 150/95.

On investigation the urine was normal, and the W.R. and Kahn tests were negative. Radiographs showed that the heart was slightly enlarged in its transverse diameter, and that there was considerable calcification of cerebral vessels. Electrocardiograms revealed left axis deviation only. A blood count showed: Hb, 12.5 g. (80% Sahli); red cells, 4,210,000 per c.mm.; white cells, 10,400 per c.mm. (differential count normal). Electroencephalograms did not reveal any focal signs. Lumbar puncture showed a pressure of 180 c.mm. H₂O; no ventricular or spinal block. The fluid was clear and colourless, with 1 lymphocyte per c.mm. Globulin was normal; protein, 40 mg. per 100 ml. Lange, normal. W.R. negative.

Psychological examination showed that he was probably a man of superior previous intelligence, with learning and memory failure; the perseverative quality and complete failure to improve suggested an organic origin.

Because of the above symptoms, signs, and investigation results, he was regarded as a case of organic brain change with aphasia due to cerebral arteriosclerosis, but with no evidence of a focal lesion.

Treatment

The above state continued for three weeks with some fluctuations. Occasionally his speech improved, and the nominal difficulties and perseveration tended to lessen for

a few hours at a time, but never completely disappeared, while the inability to write persisted throughout.

As a result of these fluctuations in the clinical state and a consideration of the underlying pathology, which was believed to be one of arteriosclerosis, an attempt was made to improve the cerebral circulation by opening up collateral arterioles. Accordingly he was given a test intravenous injection of 40 mg. of priscol, very slowly. Two minutes later his face and conjunctivae became very flushed, and the retinal vessels were noted to be wider than before. Serial blood-pressure readings indicated a rise in the systolic but a definite fall in the diastolic pressure (systolic 150–158, diastolic 95–75 mm.). The pulse rate increased from 74 to 96 over the next seven minutes. Together with these physiological changes there was a most remarkable improvement in his speech. Exactly four minutes after the injection he sat up in bed, saying he felt "wonderful," and it was clear that he could find words to express anything. Moreover, for the first time he was able to write his name and to copy sentences. His emotional disturbance disappeared, and he was in every way considerably improved. This effect lasted about three hours, but afterwards he rapidly returned to his aphasic condition and his previous state of agitation.

The above procedure was tried again, with exactly the same results, and a record was made on the magnetic tape recorder, which allowed the great differences in the speech performance to be noted.

To evaluate the effect of suggestion, first normal saline and later vitamin B₁ were given intravenously with exactly the same preparations and precautions as used in the priscol experiment, but there were no results whatsoever. Nicotinic acid was also used, and certainly produced the physiological effects of a peripheral vasodilator, but brought no improvement in his speech function. During one of the "lucid intervals" after a priscol injection, psychological testing showed a good performance on learning tests and no evidence of memory failure.

It was decided to treat him regularly with oral priscol, and he was given 25 mg. six times a day. After 48 hours his speech and his writing began to improve, and at the end of a week were practically normal. The distress and agitation were very much lessened, and it was quite clear that most of his emotional upset was due to his inability to speak.

About a fortnight later the tablets of priscol were stopped and a vitamin C preparation was given in its place, both tablets being identical in size and shape. At the end of the fourth day he showed deterioration, the difficulty in finding names becoming again very obvious.

A further intravenous injection of priscol rapidly resolved the aphasia, but as 75 mg. was required it was considered that he was becoming tolerant to the drug. Future events confirmed this hypothesis, as in spite of increased dosage (up to nine tablets a day) he slowly returned to his former state of motor aphasia and agraphia and his depressed and agitated condition.

Comment

Although the results of this case were ultimately poor, it is felt that similar therapeutic trials would be of value, especially in cerebral arteriosclerotics with minimal intellectual failure, in some of whom it may have a more lasting effect.

It is probable that priscol could act in only one of two ways in this case: either by means of its histamine-like action on arterioles, causing increased dilatation in the affected area and in the region surrounding it, so that more oxygen might be available in the area of depressed function; or, assuming the arterioles to be affected by arteriosclerotic changes but still partly capable of spasm, by its physiological effects actually relieving this spasm. The latter is less probable, as both lack of oxygen and excess of metabolites—especially CO₂, as can be expected in a relatively ischaemic area—are potent vasodilators, making any spasm improbable.