to be somewhat more effective than carbon tetrachloride alone for a pure hookworm infection also. Doses up to 1 drachm of carbon tetrachloride alone are being given to adults. Formerly m 80 were frequently given, but cases that were resistant to 1 drachm were usually found to be equally resistant to the larger dose. The dose is given first thing in the morning before eating, and no purge is given.

After trying various combinations the following standard treatment is given to adults: one ounce of castor oil is given at night, and the next morning a mixture containing 1 drachm of carbon tetrachloride, 1 c.cm. of oil of chenopodium, and 1/2 oz. of liquid paraffin. As a rule the faeces are examined again a week to ten days after treatment, and if necessary the treatment is repeated. The immediate effect on the patients does not seem to be any more marked when this mixture is used than when the carbon tetrachloride is given alone. Almost all the patients complain of feeling drunk for a time varying from a few minutes to a day. As a rule three or four motions are produced in the twenty-four hours following the treatment, and these often contain numerous worms (ascaris). Occasionally slight vomiting, headache, or pain in the abdomen occur.

The treatment has been given to Chinese, Dyaks, Tamils, and one Japanese, and the series of 84 cases contains one European and one Chinese schoolboy who were not in the General Hospital. Almost all the Dyaks examined have been found to harbour ascaris, and a large percentage hookworms also. In spite of this fact, almost all the very heavily infected cases, exhibiting extreme anaemia, oedema, and debility, occur in Chinese, and no death from ankylostomiasis can be recollected among the Dyaks at the General Hospital. The Chinese also appear to be somewhat more resistant to treatment. The results as regards actual clinical improvement among the heavily infected Chinese have been somewhat disappointing. In several the stools have been reported free from ova after treatment, and the patient has left the hospital without oedema and feeling much stronger, though probably with still a high degree of anaemia; only to return shortly afterwards with oedema again, though the faeces still show no ova. In many cases a weekly haemoglobin test by the Tallqvist method was made, but few showed a rapid or extensive rise. Many cases of this nature were heavy opium smokers. All cases were given *mistura ferri arsenicalis*, and many showed an immediate, rapid, and apparently permanent improvement, in contrast to the type of case mentioned above.

The drug appears to have no effect against *Trichocephalus dispar* and *Strongyloides stercoralis*, and specimens containing ova or embryos of these worms only, have been counted as negative. The drug has been given to patients with fever from various causes and has also been given in conjunction with courses of novarsenobillon and emetine injections, without ill results. In a few cases a full dose has been given on two alternate mornings. This caused no ill effects but did not apparently increase the anthelmintic power of the drug. The majority of the hookworms were of the species *Necator*.

In 35 out of the 84 patients treated two negative examinations of the faeces were obtained after treatment, and in 17 one only. In 26 instances the patients received several treatments, but still showed ova in the faeces or left the hospital before treatment was completed.* Six patients died; they were as follows:

Case 1.—A Chinese, aged 54, was admitted on March 14th, 1922, with a heavy hookworm infection. He received in all 8 c.cm. of oil of chenopodium and 140 grains of thymol. Ova of hookworms were still reported very numerous. On September 1st he received m 60 of carbon tetrachloride; on September 8th ova of hookworms and ascaris were reported as scanty. On September 15th he died. The necropsy revealed oedema of lungs and purulent bronchitis with numerous hookworms and trichocephalus in the intestines.

Case 2.—A Chinese, aged 38, was admitted on August 14th, 1922, with a heavy hookworm infection and a mild ascaris infection. He had marked ascites and cirrhosis of the liver. The abdomen was tapped ten times. He received three doses m 60 of carbon tetrachloride, after which scanty ova of hookworms and

embryos of *Strongyloides stercoralis* were reported. On November 20th he died. The necropsy revealed typical cirrhosis of the liver of the alcoholic type and a few hookworms in the small intestine.

Case 3.—A Chinese woman, aged 26, was admitted on October 16th, 1922, with a heavy infection of hookworms and amoebic dysentery. The haemoglobin index by the Tallqvist method was 30 per cent., and later fell to 10 per cent. The dysentery cleared up under emetine, and she received three doses m 60 of carbon tetrachloride, after which on one occasion no ova were found in the faeces. She was intolerant of any form of control and frequently left the hospital and returned. On February 1st, 1923, she died with diarrhoea and ascites. At the *post-mortem* examination about twenty hookworms were found in the small intestine.

Case 4.—A Tamil, aged 38, admitted November 13th, 1922. He harboured ankylostomes, ascaris, and *Trichocephalus dispar*. He received 1/2 c.cm. of oil of chenopodium with m 60 of carbon tetrachloride. He then left the hospital, but returned on December 25th, his faeces showing ova of *Trichocephalus dispar* and hookworms, both very scanty. On January 29th, 1923, he died. The necropsy showed pyopneumothorax. No worms were found in the intestines.

Case 5.—A Chinese, aged 34, admitted on November 22nd, 1922, with subtertian malaria and an infection of hookworms. The malaria responded to quinine treatment, and on November 29th he received m 80 of carbon tetrachloride. On December 5th he became mentally deranged, and later violent, so that he was removed from the hospital. On February 19th, 1923, he died of amoebic dysentery. The intestines were not examined for worms.

Case 6.—A Chinese, aged 64, admitted on December 7th, 1922, with epithelioma of the external auditory meatus. He also harboured hookworms, ascaris, with which he was heavily infected, and *Trichocephalus dispar*. He was later found to be suffering from quartan malaria and developed amoebic dysentery. He received 1 c.cm. of oil of chenopodium in a mixture with m 45 of carbon tetrachloride; after this no ova were found in his faeces. He died on December 27th. At the necropsy about six hookworms were found in the small intestine and numerous *Trichocephalus dispar* in the large. There were no ascaris. Macroscopically the heart and liver did not appear to be fatty.

I wish to express my indebtedness to Miss E. J. O'Driscoll, under whose supervision all the faeces examinations were carried out, and who made suggestions as to dosage. I also wish to thank Mr. W. E. le Gros Clark, Principal Medical Officer of Sarawak, for permission to publish the cases.

AN EXTREME CASE OF DIFFUSE SYPHILITIC FIBROSIS OF THE LUNGS.

BY

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In the work on *Fibroid Diseases of the Lung*, by Sir Andrew Clark, Dr. W. J. Hadley, and Dr. Arnold Chaplin (London, 1894, p. 84), it is stated that "syphilis is undoubtedly, etiologically, concerned in fibroid disease; but it is with extreme rarity that cases capable of being ascribed to this cause are to be met with." It is further stated that most syphilitic cases take "the form of patches of gummatous material with induration around them. In some few cases a diffused form is met with, much resembling pure fibroid disease."

It is of this diffused form that the following case is a most remarkable example.

The patient, a man aged 53 years, was admitted to the German Hospital on March 28th, 1923, under the care of my colleague, Dr. E. Schwarz. I saw him later during the temporary absence of Dr. Schwarz, by whose kindness I am permitted to publish the case. On admission the patient was thin and emaciated-looking, with dyspnoea and an extreme degree of "clubbed fingers." There was no fever. The history was that he had had a chancre twenty years ago, and that his wife had had three or four miscarriages. He had had influenza in 1918, but had otherwise enjoyed fairly good health until about six months ago, when he commenced to suffer from shortness of breath. His wife thought he had been ill for a somewhat longer time. In the hospital, besides the dyspnoea and clubbed fingers, the chief sign was extreme dullness to percussion over the upper parts of both lungs, especially in the supraclavicular regions, and at the back, from the apices down to the middle of the scapulae, with breath sounds of vesiculo-bronchial type. At one part of the left back slight cavernous breathing was heard; over the bases there were some pleuritic sounds. The cardiac dullness was increased to left and right, and there was an accentuated pulmonary second sound. There was apparently no enlargement of the spleen or liver. The urine was free from albumin and sugar.

At first the case appeared to be one of chronic pulmonary fibrosis of tuberculous origin, with dilatation and hypertrophy of the right

* The clinical reports of these cases have been omitted owing to pressure on space.

side of the heart, and with clubbed fingers connected with the chronic obstruction in the pulmonary circulation. Roentgen-ray examination of the lungs likewise suggested the changes met with in cases of diffuse chronic pulmonary tuberculosis. But the absence of crepitation and all signs of active pulmonary tuberculosis was remarkable. There was very little expectoration and in the scanty mucous sputum obtainable no tubercle bacilli could be found. The Pirquet cuti-reaction for tuberculosis was weakly positive, as it is in most adults. On the other hand the patient's blood serum (April 5th) gave a strongly positive Wassermann reaction. During a prolonged attack of the "cardiac dyspnoea" type the patient died on April 6th. From April 3rd there had been occasional slight fever.

The necropsy (Dr. Lang and Dr. Welsch) showed diffuse fibrosis of both lungs, especially of the upper lobes, so that little pieces cut from the upper lobes sank in water. In the middle portions of the lungs the fibrosis was not so extreme as in the upper lobes, and pieces did not sink in water. Over the lower lobes there was old pleurisy. The cavernous breathing heard (as above mentioned) over the left back during life was obviously due to solid fibrosed lung over a bronchus. The heart was hypertrophied, especially on the right side, doubtless owing to the obstruction in the pulmonary circulation. The wall of the right ventricle was relatively so thick as almost to resemble that of a left ventricle. There was an old calcareous patch in the arch of the aorta, and the left coronary artery was considerably calcified. Elsewhere in the body there was nothing special to note, excepting what suggested a small infarct under the capsule of the liver; it might have been of local syphilitic origin. A careful search was made for old tuberculous lesions, but no caseous or calcareous foci were found in either lung and there was nothing in the lymphatic glands to suggest old tuberculosis.

A microscopic section from the upper lobe of the left lung shows extreme fibrosis, with irregularly distributed lymphocytic infiltration, but no characteristic tuberculous feature. Professor S. G. Shattock, who kindly examined it, writes: "I should think that the fibrosis is syphilitic, because of the positive Wassermann reaction, and because of the diffuseness of the change and the lymphocytic infiltration of the fibrous tissue and comparatively unaffected state of the alveolar epithelium."

Besides Dr. Schwarz, I have to thank the house-physicians, Dr. Lang and Dr. Welsch, for their kind help.

Since reading a paper on acquired syphilis of the lungs at the Medical Section of the Royal Society of Medicine in November, 1916,¹ I have become inclined to think that syphilitic changes in the lungs occur more frequently than is even yet commonly supposed. In patients with old tertiary syphilitic lesions elsewhere it is not very rare by Roentgen-ray examination of the lungs to find appearances suggesting tuberculous changes, though all other signs and symptoms of active tuberculosis are absent, notably in regard to examination of sputum. In some of these cases I think that there are minor degrees of syphilitic fibrosis of the lungs present. I believe, moreover, that in some cases diffuse syphilitic fibrosis of the lungs commences insidiously, and runs an insidious and progressive course, the patient being supposed to suffer from ordinary chronic bronchitis and pulmonary emphysema with or without acute exacerbations.

REFERENCE.

¹ F. Parkes Weber: *Proc. Roy. Soc. Med.*, Section of Medicine, 1916-17, vol. x, p. 23.

VOLVULUS OF THE LARGE INTESTINE.

BY

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ACUTE volvulus of the large intestine is one of the rarer and most fatal forms of intestinal obstruction. Out of 199 cases of acute colonic obstruction operated upon at the Manchester Royal Infirmary during the ten years 1913-22 there were only six cases of this nature; of these two died after operation. In the six cases the caecum and the sigmoid colon were each involved on three occasions. By the term "volvulus" is meant the twisting of the bowel upon its mesenteric axis, resulting in obstruction to the passage of the intestinal contents and arrest of the circulation in the involved loop when the torsion exceeds 180 degrees. A rare type of volvulus has also been described where the sigmoid colon is intertwined with a coil of small intestine.

ETIOLOGY.

Torsion can only occur in that part of the large intestine which possesses a mesentery and where its base of attachment is narrow; such conditions are found in the

sigmoid loop, which is said to be implicated in about 70 per cent. of cases. Torsion is less often met with at the ileo-caecal region and is possible only when the caecum or ascending colon has some degree of freedom of movement. This unfixed condition may be of congenital or acquired origin. The congenital form is seen when the caecum and ascending colon have a mesenteric attachment to the posterior abdominal wall—a result of failure of obliteration of the foetal mesentery, which normally fuses with the posterior parietal peritoneum in this region and leads to fixation of the gut. Perhaps more often the condition is acquired and is found associated with a long history of constipation, where the bowel is more or less constantly distended, and the retained contents drag upon and elongate the mesentery, thus bringing the ends of the loop close together, as may not unfrequently be seen in the sigmoid colon. In Hirschsprung's disease (idiopathic dilatation of the colon), a condition which is characterized by lengthening and dilatation of the colon, and in which the most marked clinical features are constipation and meteorism, all the conditions favourable to the occurrence of volvulus are found. This disease, though more commonly seen in children than adults, is not so rare as is generally supposed, and it is not unlikely that it may be an important predisposing factor in the etiology of volvulus, when the disease pursues a chronic course. Cases of so-called megacolon in the adult have been recorded from time to time, and these may be examples of Hirschsprung's disease dating from infancy which have reached mature age, or the dilatation of the colon may only commence when adult life is reached. The anatomical arrangement of the redundant sigmoid invites kinks and twists, and it is not difficult to see how such cases may result in a volvulus.

One of the predisposing causes of torsion is a laxity of the attachments of the colon. In children, however, torsion is a rare occurrence, and at this period of life want of fixation of the bowel tends to predispose rather to intussusception. In elderly persons, on the other hand, intussusception is seldom met with, and with advancing age the liability of the bowel to become twisted appears to be greater.

The sex incidence is remarkable in relation to these affections of the colon; all of them occur more frequently in males—intussusception 70 per cent., volvulus 80 per cent., and Hirschsprung's disease 85 per cent.¹ This fact is difficult to explain. It appears not unlikely that the actual onset of volvulus is dependent on some disorder of the neuro-muscular mechanism of the bowel. Keith² has demonstrated the presence of special neuro-muscular junctions, situated at certain points in the intestine, which he considers control its movements. It may be that, owing to some abnormal cause of irritation, this specialized tissue is thrown into a state of spasm and a temporary obstruction is set up. Acute distension of the bowel is thereby produced and a kink or twist may follow, when the bowel is freely mobile, as the result of irregular peristaltic action.

SYMPTOMS.

The onset of the condition is generally acute, as both obstruction and strangulation will be produced. The sudden onset in a patient usually over 40 years of age, with abdominal pain, absolute constipation, and meteorism, is the combination which should suggest a volvulus. Abdominal distension is the most marked clinical feature of the condition, and in no other variety of intestinal obstruction is the distension produced so rapidly and to such a marked degree.

A tumour may sometimes be palpated, or the outline of the distended loop seen through the abdominal wall. Vomiting is not as a rule marked, as the obstruction is situated low down. Collapse appears later, and, where operation is delayed, death usually follows within a week.

MORTALITY.

The prognosis depends on the time when operation is carried out, and recent figures show a marked improvement with earlier diagnosis and more prompt surgical intervention. Barnard³ records a mortality of 93 per cent. out of