

A CASE OF INTESTINAL OBSTRUCTION CAUSED BY AN ENTEROLITH SPONTANEOUSLY CURED BY EVACUATION THROUGH AN UMBILICAL FISTULA.

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THREE reasons justify the publication of the following isolated case—viz.: enteroliths are not common; they are specially rare in children; and enterolith obstruction is seldom recovered from by spontaneous evacuation through an abscess.

A scholar, aged 12 years, was admitted to my care in the Dundee Royal Infirmary on Dec. 23rd, 1909. He was the third of five children, one of whom had died aged 45 days from congenital icterus. His mother was well and the other children were said to be "fairly strong." His father had died three years previously from locomotor ataxia. The patient had never been a very robust child. Immediately after birth there seems to have been some inflammation about the stump of the cord and this culminated in an abscess which was incised, but it gave no trouble after that and healed well and completely after six weeks. He was solely breast-fed until he was nine months old, and though troubled with flatulence as a child, was fairly healthy during the first nine years of his life. During that time he was very difficult to please with regard to his food, and seemed to have a special objection to liquid in any quantity, and a predilection for dry food. There is no history of indulgence in porridge. At the age of 9 years he had two "convulsion fits" within a fortnight, apparently hysterical, on hearing of his father's death, and since then, his mother thought, there had been greater difficulty in pleasing him with his food. During the six months preceding his admission he had three attacks of colic or "cramp in the stomach," which came on from no obvious cause and lasted about 24 hours. Each attack began with pain in the region of the umbilicus, and was followed after a couple of hours' duration by vomiting. The bowels were not affected in any way, neither constipation nor diarrhoea being noted or complained of. The attack for which he was brought to hospital had come on ten days previously to admission. The usual pain occurred, was followed by vomiting, and was treated by hot applications. The expected relief in this instance, however, was not obtained by the usual remedies. The bowels were constipated, and the pain was not constant, though it varied much in severity. In many ways the attack simulated appendicitis.

On admission the child looked very ill; the tongue was dry and covered with thick brown fur and the lips with sordes. The temperature was normal, the pulse was 96, and the respirations were 20 per minute. The abdomen was scaphoid and symmetrical, and there was a pointing abscess at the umbilicus which was protruding, inflamed, and fluctuating. It was about this area that the pain seemed to culminate, and elsewhere the abdomen could be palpated pretty easily. There were no tumour, however, and no abnormal dullness. On the day following admission, though sick and vomiting, he was easier because the umbilical abscess had burst and was discharging offensive pus. Then for six days he had less pain and no sickness, and there continued a copious foul-smelling discharge which necessitated frequent dressing, but the boy did not seem to make progress. Two days later, after an increase of pain, the vomiting recommenced and he was unable to retain any food during 24 hours. He seemed thinner and weaker and there was still a large amount of pus pouring from the umbilical sinus. On Jan. 3rd, 1910, 11 days after admission, the sinus was cautiously enlarged under general anaesthesia and a drainage-tube was inserted. This was followed by a diminution of the discharge, but it was noticed on the 5th that there was some faecal matter mixed with the pus. The slight improvement was maintained for a few days, but by the 10th he was again ill, and thereafter seemed from day to day to be losing flesh and strength. The sinus gradually drew together

and appeared to be inadequate for the evacuation of the cavity it led to. Consequently, on Feb. 14th the sinus was enlarged by dressing forceps, and an attempt was made to provide more efficient drainage. This was successful to some extent. On March 5th, while the wound was being dressed, a rounded calculus-like mass presented in the sinus and was easily removed, its escape being accompanied and followed by an unusually large quantity of pus. From that moment the wound healed rapidly and the boy's condition materially improved, and he was discharged healed and looking well and stout ten days later. His general improvement was as striking and remarkable as the improvement in the local condition.

The structure which was discharged proved on examination to be an enterolith. It was globular, measured $2\frac{1}{2}$ inches in circumference, rather larger than an ordinary marble, being smooth for the most part but not polished, and when dried its most striking feature was its lightness. It weighed 24 grains, and, indeed, was considerably lighter than a pith ball of equal size. It bears a striking resemblance in miniature to the concretions commonly found in the colon of the horse.

With the history this child presented, the imperfect health he had enjoyed, and the poor physique he had attained, even in the absence of a history of alternating constipation and diarrhoea, it is not to be wondered at that on admission the diagnosis of tuberculous peritonitis with perforation and the formation of a faecal fistula was formed; indeed, it is probable that had it not been for the dangerous proximity of a foetid sinus he would have been operated on under this supposition. Still less is it reprehensible that before admission the previous history, the sudden onset, the constipation, vomiting, and pain, should have led to the diagnosis of appendicitis.

The enterolith was of the light-coloured variety, and as above noted, there was no history of special indulgence in porridge, which is supposed to predispose to the formation of such avenoliths, or oat-stones. It is almost contrary to what one would expect, but characteristic of the condition, that the intestinal obstruction to which the "stone" gave rise should be of a chronic character and spread over years before the condition becomes acute. Where the enterolith lay in this case it is impossible to say. The sinus led from the umbilicus backwards into the right loin, but the obstruction must have been in the small intestine, for a foreign body of its size could not cause obstruction in the great.

There is a considerable, though scattered, literature on the subject, and its perusal and of that of intestinal obstruction from foreign bodies, suggests that in some cases of "gall-stone intestinal obstruction," where there is a history of years of recurring colic and vomiting but no jaundice, the "gall-stone" might prove to be an enterolith on investigation. In the above case the enterolith felt solid and heavy, almost stone-like, when first extruded and was quite as solid and firm as many a single gall-stone. It was only after drying that it assumed its pale yellow colour and showed its peculiar lightness.

Dundee.

NOTES UPON AN OUTBREAK OF ILLNESS DUE TO TINNED MEAT IN THE CITY OF CARLISLE.

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ON August 26th last I received information of an outbreak of sudden and suspicious illness in the Denton Holme district of Carlisle, which upon investigation was found to have occurred in a number of persons who had partaken of the contents of a tin of American corned beef; 21 persons in all were affected, of whom several were said to be suffering somewhat severely. The illness appears to have manifested itself without any premonitory symptoms by the occurrence of vomiting, diarrhoea, pains in the stomach, and collapse, but fortunately the outbreak was not attended with any fatal result, and all those affected are now well.

I secured what remained of the suspected meat and divided it into two portions, one of which together with the tin I forwarded to the city analyst, Dr. R. Hellon, to examine

the specimen for irritant metallic poisons and any evidence of faulty tinning or accidental punctures in the tin; the remaining portion was forwarded in a sterile bottle to Professor S. Delépine of Manchester for the purpose of a complete bacteriological examination.

Having obtained a list of all who had purchased portions of the meat investigation was then made at each house, which resulted in information being obtained that ten families had made purchases of the meat in quantities of from two ounces to half a pound. In the 10 families 21 persons partook of the meat and in each instance the effect was practically the same, although in some cases the symptoms were more severe than in others. It will be observed that only a small quantity of meat in each case was purchased and the severity of the attack appeared to vary in direct proportion to the amount of the meat eaten, the worst case being that in which one person (a male adult) consumed a quarter of a pound. The earliest symptoms of the disease manifested themselves at periods varying from 15 minutes to 4½ hours after the consumption of the meat, but in the greater number of the cases the interval was about an hour, and in some of the cases in which the symptoms were said to have been severe medical men were called in. The meat was purchased by the shopkeeper from a firm of first-class American packers, and the particular brand of meat to which the tin in question belonged is a brand which has a good reputation for quality and packing.

It would perhaps be advisable here briefly to outline the information obtained with regard to the distribution of the individual portions of meat purchased.

A. purchased a quarter of a pound of the meat on the morning of August 25th, which was partaken of at breakfast by three persons, aged 24, 18, and 15 years respectively; all three were shortly afterwards seized with vomiting, diarrhoea, with collapse, and some loss of power in the lower limbs.

B. purchased a quarter of a pound of the meat in the early morning of the 25th, some of which she partook of and shortly afterwards exhibited the same symptoms as the previous cases.

C. purchased a quarter of a pound of the meat on the night of the 24th, which was taken by her husband to his work and which he ate at 3 A.M. on the morning of the 25th. He was shortly afterwards seized with violent pains in the abdomen, vomiting, diarrhoea, and collapse. He also lost the power of both legs and was removed from his work to the house of a relative who lived near, where he remained for about 24 hours in a dangerous condition.

D. purchased a quarter of a pound of the meat on the morning of the 25th, which was eaten at mid-day by her husband and two children. At 3 P.M. in the afternoon one of the children returned home from school, the husband had to leave his work, and at 5 P.M. the second child became ill; all exhibited symptoms of vomiting, diarrhoea, and collapse.

E. purchased a quarter of a pound of the meat on the morning of the 25th, which was partaken of by her husband and herself. The husband had to leave his work through vomiting and diarrhoea, and later in the afternoon she was attacked with vomiting, diarrhoea, and collapse.

F. purchased a quarter of a pound of the meat on the morning of the 25th, some of which she took for her midday meal, and within an hour she was seized with vomiting, diarrhoea, and collapse.

G. purchased one pennyworth (2 ounces) of the meat on the night of the 24th which she made into a sandwich for her husband. The husband ate this at 3 A.M. the following morning and was shortly afterwards seized with vomiting, diarrhoea, and collapse. The wife whilst making the sandwich ate a piece of about the size of a hazel nut and was seized with diarrhoea shortly afterwards but no other symptom.

H. purchased half a pound of the meat on the night of the 24th, which was eaten for breakfast next morning at 7 A.M. by her husband, two sons, and a niece. At 8 A.M. one son was seized with vomiting, diarrhoea, and collapse, shortly followed by the father, brother, and cousin exhibiting similar symptoms, with the exception of the younger brother, who had no vomiting.

J. purchased a quarter of a pound of the meat on the night of the 24th which she made into a sandwich for her husband, during which process she ate a small piece about the size of a walnut. At 1 A.M. the husband ate his sandwich, and at 3.30 A.M. he was seized with pains in the

abdomen, vomiting, diarrhoea, and collapse. He managed to get home, and on arriving there found his wife in a similar condition. His wife was quite well in 24 hours but he was not fit for work for five or six days.

K. purchased a quarter of a pound of the meat on the night of the 24th, part of which she and her father-in-law partook. They were both seized shortly afterwards with vomiting, pain in the abdomen, and some collapse.

On August 29th I received the following provisional report from Dr. E. J. Sidebotham, assistant to Professor Delépine in the Public Health Laboratory, Manchester:—

The specimen showed no appearance of decomposition, but it is extensively infected with micro-organisms. These can be seen with a low magnification forming colonies on the surface, and they have been obtained by cultivation from the interior of the meat. The forms so far isolated are not ones usually associated with cases of food poisoning. Further investigations are being made, and a report will be sent as soon as possible. The specimen is unfit for human consumption.

I also received the following provisional report dated Sept. 1st from Dr. Hellon upon the chemical examination of the meat:—

In compliance with your request I have made a most careful chemical examination of the American corned beef which I received from you on 27th ultimo. My search has been directed chiefly to the discovery of the presence or absence of arsenic, tin, and lead, and incidentally to that of other metallic poisons. The result of my investigation has been to show conclusively the absence of any poisonous metal which could have caused the illness you have described to me. I am therefore convinced that if (as appears probable from the symptoms) this illness was caused by an irritant poison, the poison was not a metallic one.

On August 31st I received a further report from Dr. Sidebotham as follows:—

The meat had no unpleasant smell and there were no signs of decomposition. On inspection with a low magnifying power numerous colonies could be seen on the surface. These were examined microscopically and found to consist of cocci and small bacilli. On cultivation numerous organisms were obtained both from the interior and the outer surface of the meat. These consisted of cocci of two sorts and a yeast. By anaerobic cultivation two sorts of bacilli were obtained. None of these organisms were of the sort usually associated with cases of the gastro-intestinal form of food poisoning.

The following experiments were carried out. Three guinea-pigs and three mice were fed with portions of the meat; one of the guinea-pigs died in 48 hours, but post mortem there were no signs of gastro-intestinal irritation and no obvious cause of death was found. The other guinea-pigs and the mice were unaffected. Two guinea-pigs were inoculated subcutaneously with a watery extract of the meat and were unaffected.

A substance was obtained by the chemical method used for isolating toxins. This was tested by subcutaneous inoculation of a guinea-pig and caused no ill-effects. The meat is extensively contaminated and quite unfit for food, but we have not succeeded in isolating the organism or substance which has rendered the meat pathogenic.

Whilst waiting for the report of the city analyst upon the condition of the tin, I wrote to Dr. Sidebotham asking him if he would supply me with further information relating to the morphological and other characteristics of the bacilli under observation seeing that they were, in his opinion, unclassified varieties, in reply to which I received the following report:—

1. A staphylococcus which produces yellow colonies on agar and gelatin, liquefies gelatin somewhat slowly.

2. A staphylococcus which produces white colonies on agar and gelatin, liquefies gelatin rapidly. These two organisms were very abundant, and in about equal numbers.

3. A small yeast which was present in very small numbers.

4. Bacilli of two varieties which were obtained by anaerobic cultivation of the meat, of which the relative numbers were not obtained. As none of these organisms showed any pathogenic action on guinea-pigs and mice it was not thought necessary to carry the investigations further.

Dr. Hellon's report upon the tin is as follows:—

In compliance with your request I have returned to you the tin which contained the corned beef suspected of having caused the illness in Denton Holme, also the label which I detached from the tin. I have carefully examined the tin with a lens but have been unable to discover any perforation or opening through which air might have leaked in. As a test I filled the tin with boiling water, and after the water had cooled I carefully searched the outside of the tin with a lens for minute drops of water but found none. The loose top of the tin could not be subjected to this water test, but the lens showed no flow in the soldering through which air might have entered. I am therefore of opinion that the tin was sound and airtight.

The last two reports conclude the bacteriological and chemical investigation. The report of Dr. Hellon showed pretty conclusively that the meat could not have been infected after leaving the packers as a result of faulty tinning or subsequent accidental punctures; furthermore, it must be remembered that the principal organisms under observation were of the anaerobic variety. The questions for me to decide were: (1) at what period the meat became infected; and (2) whether the infected meat was responsible for the outbreak of illness.

With regard to the first question, the meat might have been infected at some period either before or during the process of tinning or after the meat was opened at the shop, but the latter theory is negatived by the fact that the principal organisms present were of the anaerobic group, that the portions of meat were purchased by the several householders so shortly after the tin was opened and eaten within a very short interval following—so short, indeed, that the amount of the growth of the organisms present in the meat would have been impossible, even assuming that they had been of the aerobic variety. Therefore, upon the evidence I am convinced that the meat was contaminated previous to, or at the time of, tinning at the factory in America.

In deciding the second question due regard must be given to the fact that not only was the history as to the consumption, onset, and other clinical features the same in each case, but also (a) that the vomiting, diarrhoea, and other symptoms came on suddenly and acutely within a very short interval of eating the meat; (b) that every person who partook of the meat was ill; and (c) that the meat in question was the only article of food eaten in common by the several persons affected.

Outbreaks of food poisoning are not altogether uncommon and do not always terminate so favourably as the one under review. In this class of poisoning the ill effects are due to the ingestion of pre-formed poisons which are elaborated by the micro-organisms in the infected food. The poisonous agent does not undergo any further bacteriological change in the human system, and thus, there being no period of incubation, the symptoms come on suddenly, which constitutes an important comparison to that class of cases in which the illness is due to the development or proliferation of the micro-organisms within the blood or tissues of the body.

In criticising the bacteriological reports, which were to the effect that neither the feeding nor the inoculation experiments upon the guinea-pigs and mice gave rise to a fatal issue, it must be remembered that the effect of all toxins is proportionate to the virulence of the toxin and the amount received into the system, and as there appears to be no doubt that the portion of the tinned meat eaten in each case was the cause of the illness, the experimental results by Dr. Sidebotham, together with the non-fatal result of the outbreak, confirms me in my opinion, as expressed to my committee in a report dated Sept. 2nd, that the toxins at the time the meat was eaten were in all probability not of a very virulent nature.

Carlisle.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF THERAPEUTICS AND PHARMACOLOGY.

Action of Sulphur as Intestinal Antiseptic.—Experimental Administration of Drugs of the Digitalis Group.

A MEETING of this section was held on Nov. 15th, Professor A. R. CUSHNY, the President, being in the chair.

Professor R. B. WILD (Manchester) read a paper on the Action of Sulphur and Certain of its Compounds as Intestinal Antiseptics. In addition to its action as a mild purgative, sulphur has a definite antiseptic action in the intestine owing to the formation of H_2S when bacterial decomposition takes place in its presence. To this action may probably be attributed the traditional efficacy of sulphur and of sulphurous waters in chronic gout and rheumatism, and in certain skin eruptions. The superiority of sulphates as purgatives is in part due to their reduction to sulphides in the bowel. The preponderance of plants containing sulphurous volatile oils among those used dietetically is remarkable. Long-continued administration of sulphur causes depression. Sulphur is tasteless, insoluble in the stomach, without action on digestive enzymes, forms in the intestine antiseptic substances which penetrate to all parts of the bowel, has valuable laxative properties, and is cheap.

Dr. H. HUME TURNBULL gave a further account of the Experimental Administration of Drugs of the Digitalis Group under Dr. James Mackenzie and Professor Cushny, which the latter dealt with in his presidential address. Strophanthus

was only about one half as active on man as digitalis, B.P. tinctures being used in both cases. Cases of rheumatic disease were most distinctly benefited, and especially those with auricular fibrillation. For the latter class of case the pushing of digitalis was the essential treatment. The drug was given in full doses until "physiological" effect (nausea, vomiting, headache, giddiness, &c.) appeared, then stopped and recommenced in smaller doses till the minimum amount which would control the heart was found. The intelligent patient could then be left to dose himself by his own sensations. In cases with partial heart-block great care was necessary.

A lively discussion followed, in which the following took part: Dr. HARRINGTON SAINSBURY, Dr. E. I. SPRIGGS, Dr. J. GRAY DUNCANSON, Professor WILD, Dr. H. H. DALE, Dr. CAMERON, and the PRESIDENT.

Dr. TURNBULL replied.

MEDICAL SOCIETY OF LONDON.

Heart Strain and Dilatation.

A MEETING of this society was held on Nov. 28th, Mr. CHARTERS J. SYMONDS, the President, being in the chair.

Dr. J. F. GOODHART read a paper on Heart Strain and Dilatation, which is published in full on p. 1607 of this issue of THE LANCET.

Sir R. DOUGLAS POWELL, in the course of the discussion that followed, said that he agreed with Dr. Goodhart that a large number of cases of dilated heart existed in the imagination of the observer. In regard to cases of so-called heart strain the most important point was that of diagnosis. It certainly was his experience that many of the cases in which the condition was brought about by excessive athletic exercises in which symptoms were attributed to the heart were cases in which there was a very great amount of anæmia. He had observed that people who had overtaxed their muscular system for a long time were apt to become anæmic. He had the utmost respect for the importance of X ray photography in certain conditions of the heart and aortic disease, but he did not think X ray photography was of much value in estimating the minute shades of differences in cardiac dilatation.

Sir LAUDER BRUNTON thought that there was much similarity both in pathology and treatment between strain of a joint and strain of the heart. If the strain of a joint was slight it was best treated by gentle movement from the first, but if it were severe perfect rest was required at first and gentle exercise afterwards, and the same was the case with cardiac strains. Cardiac dilatation might sometimes be due to causes in the central nervous system, but one of the most typical cases he had seen was in a healthy young officer who carried a heavy man on his back round the barrack yard for a wager. In disordered heart of advancing years one had to remember the importance of the general nutrition in which the heart shared, and exercise was often very beneficial for that.

Dr. HENRY DAVY urged the great importance of recognising the connexion of decayed teeth with the condition under discussion. He narrated the facts of a case of a patient of his of about 63 years of age, who was a teetotaler and never had syphilis nor any other disease, and yet had manifest atheroma of all his arteries and a hypertrophied heart with the apex beat well outside the nipple and a feeble unsatisfactory pulse, with an occasionally soft mitral systolic bruit after much exertion. He had always been athletic, had captained the cricket team at a public school, and was a university "blue" in cricket and football. He was said to have suffered from "heart strain" when at college and was just one of those cases which might be put down to over-athleticism. But that clearly was not altogether the explanation of his condition. A few months after seeing the patient his sister came under Dr. Davy's care in precisely the same condition as her brother; if anything, the atheroma and feebleness of the heart muscle were worse. That lady had never done any muscular exertion in her life; she had, on the contrary, always led a sedentary life, and the chief point in which she agreed with her brother was in having very bad teeth; in fact, neither her dentist nor Dr. Davy himself had ever seen teeth in a worse state of decay. It was clear, therefore, that the condition in the man was not due altogether to his former