through a satisfactory educational career. In these circumstances I maintain that every osteopath, chiropractor, or other cultist who wishes to practise in this country ought to go through similar courses of instruction before being licensed to practise the healing art.

In this connexion it appears to me that instead of the Legislature making possible the licensing of osteopaths in a very limited form of practice, the Medical Acts ought to be so strengthened that it would not be possible for the community to be treated by them or any other unqualified charlatan or quack. From a practical point of view it appears to me that the members of the community ought to be educated as to the real position and the nature of the practice of osteopaths, chiropractors, and other cultists. This might be effected by making instruction in general and personal hygiene compulsory in our schools. A small textbook on the subject should be available, and it ought not to be impossible to arrange that a course of instruction on this subject should be given in all our elementary schools. The Legislature, through its Education Acts and by its medical officers, makes periodical examinations of school children as regards their general health, teeth, mentality, and so on. If this is possible, surely it would be an easy matter to arrange that a course of instruction such as outlined above should be given by its medical officers.

In a similar manner a course of instruction should be given in our secondary and public schools, and an appropriate textbook provided. By means of instruction of this kind at an early stage of an individual's career he might be taught to have a definite and correct opinion as regards disease and the proper methods of its treatment. Some people have advocated that the medical profession should undertake a scheme of propaganda by film, lecture, and otherwise for the education of the public and their protection from unqualified medical practitioners. This might be very desirable, but it does not appear to me that it ought to be carried out necessarily by some organization or other of the medical profession, since this profession would lay itself open to the criticism that it is a trust which is trying to protect itself. It should be done, if considered advisable, either by the General Medical Council in a manner similar to that carried out for the education of the community in dentistry by the Dental Board, or by the Ministry of Health. Perhaps the latter body is the more correct one for this purpose, since the General Medical Council is primarily concerned with education and registration; and unless provision is made for the purpose does not possess the necessary funds.

A Lecture

ON

SOME INTESTINAL DISORDERS OF INFANCY.*

BY

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No infant, whether fed at the breast or with artificial food, escapes having indigestion in one form or another. We do not have to go far to explain this. During infancy the stomach and intestines are worked at a very high pressure to digest the food required for the infant's maintenance and growth. Any overtaking of its powers is likely to be followed by disturbed function. The commonest causes of indigestion in infancy are practically those of adults—for example, more food is taken than can be digested, or an improper food is given, which cannot be digested without the child getting colic and flatulence. There is no fact more clearly established than the great importance to the health and life of infants that they should be breast-fed for at least six months. If the infant is so fed for this length of time, even in the poorest surroundings and poverty, it will stand a very good chance

of living. The baby will escape the many pitfalls and dangers which lurk behind food out of a bottle.

It is the duty of every medical man and woman to persuade mothers to breast-feed their infants, and often a little perseverance on the part of the mother will enable her to do this, even in cases where it appears at first almost impossible. Directly a baby is weaned, especially in the first few months, difficulties are liable to arise, such as what to feed it on, how to prepare the food, the quantity to give, and so on. Even one or two breast-feeds a day, with the rest of the feeds of cow's milk, are a great help.

When the time for weaning comes, about the eighth to ninth month, it should be done by gradually replacing the feeds from the breast with the artificial food chosen. It is always a good thing to give one feed a day of artificial food from a bottle at about the fourth or fifth month, so that the infant becomes accustomed to the bottle and weaning can take place easily when it becomes necessary. This also gives the mother greater freedom. It is often a struggle to wean a baby all at once, and the one bottle early on enables weaning to be done at any time. It is seldom that breast-feeding is inadvisable. A mother with phthisis should not suckle her baby, for the reason that the mother will very readily infect her child, and it is injurious to her own health. Again, the mother may have wasted so much during pregnancy that her health will not stand the strain. There are practically no other reasons for the mother not trying to feed her infant.

Milk.

There is perhaps no single factor in connexion with infant mortality so important and so full of pitfalls as the supply of milk. The general public know little about milk, and they are quite content as long as the milk is delivered regularly and is not sour. The quality of milk supplied to most large towns is not good, and until this is improved we cannot reduce infant mortality to what it should be. The infant does not know the possible results of the food it is getting and can only express disapproval by its cries, vomiting, and diarrhoea. It is common for one food after another to be tried with bad results, and our methods of feeding infants in the past have been too inexact. Cow's milk, when pure, is an ideal food, but it is of all foods the most difficult to preserve and to handle successfully. To ensure artificial feeding being a success the mother must be taught how to modify it so that the infant can take it and digest it well. Cow's milk can be modified in so many different ways that practically every infant can take it and thrive. Cow's milk has an advantage over all patent foods in that it can be made to resemble human milk closely.

Many proprietary foods have the disadvantage of an excess of starch, and infants fed on them may apparently thrive and become fat, but they are often by no means healthy. It is not the large, fat babies which are the healthiest and the ones to stand best the strain of a severe illness. In the majority of cases where cow's milk has been tried and found to fail it has not been given in the proper quantity and strength. Foreign countries are more strict than we are in the use of proprietary foods for infants. Such foods need careful preparation, and it is a common fault to prepare them too weak.

In some cases the wasting or failure to gain in weight is the fault of the infant, and not of the food which it is having. Certain infants, although fed well, and even breast-fed, do not thrive, and this is sometimes seen in a family when each successive infant dies at the age of 3 or 4 months or sooner.

As a result of faulty feeding, an infant suffers from malnutrition, which is a comprehensive term covering a low condition of health and a lack of resistance to disease. Insufficiency of food is probably of less importance than unsuitability. Irregularity of feeding is often the cause of wasting, as it produces indigestion. It is common to find a wasting infant fed whenever it cries. Irregularity is a common cause of indigestion in adults, but the digestion of infants is even more easily upset. Feeds too large for the age are a common mistake and not recognized at first,

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for the infant may do well and have big gains in weight each week. After a time there is an upset in the digestion and the weight becomes stationary and then begins to fall. Such cases are very difficult to treat. The diluents used in the modification of cow's milk are sometimes at fault; it is common to make barley water far too thick, with the idea that the food will be stronger and hence the infant will gain the quicker. Plain water as a diluent has the great advantage that it takes no making, and there is not so much likelihood of mistakes. Lately, we have had much success with malt stock (Mottershead, Manchester). This is an active malt preparation and made with milk. It is a copy of the "malt suppe" used abroad very largely before the war. It must always be remembered that the strength of a food and the amount given at each feed should be according to the infant's weight and not according to its age.

Flatulence and Colic.

We often see a baby who according to the mother—and, I may add, the father too—is always crying. This in most instances means colic with a certain amount of flatulence or wind. Colic should never be regarded as a trivial symptom; it is often most difficult to alleviate and it causes much trouble to the parents. The baby is often only quiet when it is asleep—the rest of the day and night it is crying. It keeps the neighbours awake and is a perfect nuisance. Such a baby generally fails to gain weight, for it is the placid one that does the best. Moreover, in bad cases of colic, convulsions are liable to supervene. The main causes of colic are flatulence and undigested food, with constipation. Taking flatulence first, it is remarkable how much distress and disturbance it can cause. It often leads to vomiting after the feeds, as the wind brings the food up with it; this leads to wasting from want of food, and so intensifies the crying from hunger. Hiccup is also a common accompaniment of flatulence.

Causes of Colic.

An investigation of the diet will generally reveal the cause. First, too large feeds at too frequent intervals are being given. These large feeds distend the stomach and dilute the gastric juices. It is always good to calculate how much food an infant is having in the twenty-four hours. Hardly any infant—no matter how heavy—needs more than 40 oz. of food in twenty-four hours. Personally, I am generally in favour of three-hourly rather than four-hourly feeds. Another common cause is too much carbohydrate in the food—either too much sugar is added to each feed or a patent food containing much starch is given the child. An ordinary cow's milk feed needs about one teaspoonful of cane sugar added to each feed, and there is no advantage to be gained by using sugar of milk. It is often good to change the kind of sugar used in order to vary the taste of the feed. It is not surprising that a baby will get tired of a certain food which is given day after day.

Treatment.

A fairly weak feed should be started with and then gradually strengthened. Always feed according to the weight, not according to the age. It will need a good deal of perseverance to get the baby right. Pick the baby up after a feed to let the wind come up. If the colic is at all severe, peptonized milk is likely to suit well, for the digestion of the curd is done for the baby.

A mixture such as sod. bicarb. gr. 3, spt. amm. aromat. min. 1½, tr. card. co. min. 3, syr. zingib. min. 5, aq. carui ad dr. 1, four times a day before a feed may help a good deal. The bowels must be kept well open and an aperient given regularly each day, and not when the child is constipated. It is no use waiting to give the aperient when the child is constipated—the need is to anticipate the event. Much constipation in infancy and childhood could be prevented by good training from the earliest days. The same applies to older children, especially those attending school. It is often the custom for the boy or girl to rush off to school directly after breakfast. Time should always be made for going to the closet before school. Another thing to remember is that it is no use sending a child to the closet to stay there for an unlimited time. All he does is to twiddle his thumbs or read a book.

Intussusception.

Before leaving the subject of colic, the possible presence of intussusception must be borne in mind. Any infant who suddenly begins to kick and scream without obvious cause may quite likely be starting with an intussusception. Such an infant soon begins to vomit and to strain as if it wanted to pass a stool, but nothing escapes except a little blood and mucus. On examining the abdomen with a warm hand it is usually found more or less soft, and the tumour may sometimes be felt. In very fat infants it may be quite impossible to detect the tumour. The rectum should next be carefully explored with the finger, and the apex of the tumour may be felt, and the exploring finger on being withdrawn may be streaked with blood. The position of the tumour varies, of course, according to the length of the included gut and according to how long the intussusception has lasted.

Many cases are very difficult to diagnose, especially in the early stages, and what I think often happens is that an infant starts with an intussusception which unfolds itself on its own. It is impossible to say so quite definitely, but we see patients whom we strongly suspect of having an intussusception, but who suddenly get well and stop the crying from pain and the straining.

The large majority of cases occur under the age of 1 year, and a common age is 6 months. Breast and artificially fed infants suffer alike, and it is often the big fat babies which get it.

Treatment consists in performing a laparotomy at the earliest possible moment, and if this is done in the first twenty-four hours all should go well. The outlook becomes increasingly serious the longer it is left, and it is nearly hopeless after the fourth day, for the reason that the gut is likely to be gangrenous. Once an intussusception takes place no medical treatment is of any avail: the child must be operated upon and the gut unfolded.

Diarrhoea in Infants.

Diarrhoea is perhaps responsible for more deaths than any other disease during the first year of life. This used to be specially the case during a hot dry summer. However, by improved sanitation and by the prevention of flies, it is now much ameliorated.

It is the weakly babies, fed on artificial food, that suffer from enteritis. Of these foods condensed milk is perhaps the worst, for it contains so much sugar, and its stickiness attracts flies to infect it. Vomiting may accompany the diarrhoea, and makes the trouble worse. Such an infant wastes very quickly and goes downhill: the eyes get that peculiar sunken look, the limbs become flabby, and the skin harsh and dry. The wasting is produced by the great loss of fluid, and the infant, as it were, dries up. All young children stand loss of fluid very badly, and it is a mistake to withhold water from a child at any time.

A purge should be given at once to clear the infecting microbes away. Castor oil serves the double purpose of producing a good clearing out and then constipating, which is exactly what we want. If castor oil cannot be tolerated on account of vomiting give half a grain of calomel instead. All milk should be stopped. This is perhaps the most important of all. Water with a little sugar may be given, and the infant cannot have too much. It should be given every hour by the mouth, and the infant will take this well, as it is thirsty. If there is vomiting, fluid must be given, as saline solution, by the rectum every four to six hours. Salines are easy to give by the rectum in children, and a mother can be taught to carry this out. In severe cases it may be necessary to give the saline solution subcutaneously or through the anterior fontanelle into the superior longitudinal sinus. Albumin water is being given up, as it contains little food, and any good that it does is most probably due to the water. Often we have to make a pretence of giving some food in deference to the parents; in these cases bovril may be recommended. As soon as the diarrhoea is abating I would suggest giving a weak dried milk feed for a short time before starting with the cow's milk.

Sequelae.

An infant may be left with a weak digestion and fall into a state of marasmus. Bronchitis is a very common accompaniment, and such patients must always be kept very warm. After prolonged enteritis, swelling of the backs of the hands and dorsum of the feet is common. This is toxic oedema, and has nothing to do with kidney disease. Drugs form a minor part of the treatment. Bismuth in some form does, however, help to diminish the number of motions, and small doses of opium at the proper time. Never give opium at the onset or if the infant is collapsed. Opium is, however, useful when the large bowel is affected and there is excessive peristalsis going on.

Pyloric Stenosis in Infancy.

A clear understanding of the condition and the recognition of the importance of early diagnosis, and so treatment, is most important. I am quite sure that if pyloric stenosis in infants could be recognized early many lives would be saved. It is a more common condition than is usually thought to be the case. By pyloric stenosis we mean a great hypertrophy of the circular and longitudinal muscles which control the passage of food from the stomach to the duodenum. The muscle here becomes enormously thickened and hypertrophied so as to block the pyloric canal. The consequence of the block is that the stomach wall also increases in thickness as it tries to force food through the tight pylorus. As the food cannot get through the pylorus it is vomited forcibly. In the great majority, the infant is a boy. Many cases occur in the first-born; there is a special liability for any first-born infant to have an abnormality.

The symptoms do not appear till the infant is at least two weeks old, and the commonest time for the vomiting to start is at the age of two to four weeks. It is forcible and projectile in character and large in amount, for more than one feed may be brought up at a time. Constipation is marked, for little passes through the pylorus. The wasting is rapid and progressive, as little food is retained. The infant is greedy for the feeds, as it is hungry. This is quite unlike ordinary dyspepsia.

Waves of peristalsis may be seen passing across the abdomen, due to contractions of the stomach. They are best seen while the infant is having a feed or soon after. This peristalsis may be seen in other conditions besides pyloric stenosis, but it is specially well marked in it. The pylorus may be felt under the right rectus muscle, about an inch above the umbilicus. If the tumour is not felt, this fact should not disturb us, as the detection of the tumour is often quite impossible. I am quite convinced that so soon as the condition is diagnosed surgical intervention alone will give the best results. Although medical treatment has undoubtedly been successful in a number of cases, much valuable time may be lost, and the infant will be, in consequence, less able to stand the operation. The best operation is that devised by Rammstedt. It consists in a transperitoneal incision of the hypertrophied pyloric ring, leaving the mucous membrane intact, thereby restoring the continuity of the alimentary canal. The mortality is now being very much reduced by this method, and it should be only about 10 to 20 per cent., or even less.

Breast-feeding is a great help in the after-care of these cases, and the mother should be carefully looked after to see that her milk does not cease during the short operation period. If the infant survives, there is no disability left in the future.

PARTIAL INTESTINAL OBSTRUCTION IN A CHILD DUE TO POST-RECTAL TERATOMA.

BY

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THIS case is interesting on account, not only of the rarity of the tumour described, but also of the condition of bowel obstruction resulting from it.

Bland-Sutton¹ states that post-rectal teratomas are very rare. There is a specimen in the Middlesex Hospital museum containing hair, grease, and a tooth. The origin

of these tumours is obscure. They are probably the result of incomplete dichotomy at an early stage. Keen removed a tumour connected with the skin by a cartilaginous tract resembling a trachea. Some post-rectal tumours have been described communicating with the sacral dura mater and resembling spina bifida sacs.

D. C., a boy aged 4 years and 5 months, was sent to the Derbyshire Children's Hospital by Dr. G. S. Sims of Derby on February 5th, 1925. The mother stated that the boy had been very constipated for a few weeks, and that a fortnight previously his abdomen had suddenly swelled up. On close questioning she admitted that the child's bowels had never been regularly moved since birth. There had been no vomiting, nor any failure of appetite.

The boy was somewhat undernourished. The abdomen was enormously distended and resonant all over. A hard mass could just be felt on deep palpation above the pubes. Peristalsis was easily seen. The liver dullness was normal, the spleen could not be felt, and there was no shifting dullness in the flanks. Both testicles were in the scrotum. There was a slight rise of temperature, but this rapidly fell to normal. The pulse was 128.

On rectal examination the pelvis was found to be filled by a large hard mass lying behind and somewhat to the left side of the rectum. The bowel was so tightly compressed that it was impossible to pass the finger beyond the mass. During the examination a burst of flatus suddenly escaped and the distension of the abdomen became distinctly less marked. The urine contained no acetone or diacetic acid.

A flatus tube was passed at intervals, followed by an injection of pituitary extract. The size of the abdomen was much reduced by this procedure, but the effect was transient. Occasional enemata produced fair results, but with only temporary effect on the abdominal distension. A radiogram of the pelvis showed nothing abnormal.

Operation.

On February 16th the abdomen was opened by a left paramedian incision displacing the rectus outwards. A very small quantity of blood-stained fluid was noticed in the peritoneal cavity. The large intestine was enormously distended and hypertrophied, being about the size of the inner tube of a cycle tyre. The lower part of the small intestine also was both distended and hypertrophied. This was less marked higher up, and the jejunum appeared quite normal. The pelvis was completely filled by a hard retroperitoneal mass, the upper convex surface of which was covered with distended veins and rose well above the brim of the pelvis.

The growth was obviously inoperable. A small gridiron incision was accordingly made near the right anterior superior iliac spine and the mass exposed retroperitoneally, incised, and some fragments secured for microscopic examination. The general condition of the child not being very good, a descending colostomy was performed through the laparotomy incision and a Paul's tube inserted.

Pathological Report.

The section shows a remarkable new growth, consisting of a mass of tissue which, on close inspection, is seen to be made up of small papillary outgrowths of fibrous stroma, covered with epithelium of an elementary type. It is practically certain that this is part of a teratoma. What the tissue is it is impossible to say—it is too slightly differentiated to have a special function or name; this may be the main element of its malignancy, which is evidently of a high order. If the entire aberrant mass could be examined there is little doubt that other tissues would be discovered, though in the case of a malignant overgrowth of teratomatous tissue it is quite usual for one type of tissue to become considerably more increased than the remainder.

After-History.

The child was fairly comfortable after the operation, and the abdomen greatly diminished in size. The chief difficulty was in passing urine, and it is probable that the immediate cause of death on March 5th was uraemia. For the last few days the patient was semi-conscious.

Post-mortem Examination.

The bladder was much distended, and its walls very thin. The colon, both above and below the colostomy opening, had contracted down in a very striking manner. The liver and other viscera appeared normal. A spherical mass of friable tissue, the size of a small orange, was lying between the rectum and the sacrum—somewhat enveloping the former. This mass, on close inspection, appeared to be composed of several different tissues, and contained numerous tiny hard nodules (cartilage). No hairs or teeth were found.

The section shows various tissues, including muscular, nervous, and epithelial cells, all in a primitive state of development. There can be no doubt that the tumour is a teratoma. There is cartilage and a calcified area in the section, but no actual bone formation. The period of partial isolation from the main mass of the foetus must have been quite early.

It would appear to be a matter of doubt whether this tumour was highly malignant or benign. Some of the sections suggest the former, but several cases have been described in which similar tumours have eluded discovery until fairly late in life.

I am indebted to Dr. F. A. Knott of the Clinical Research Association for the pathological reports.

REFERENCE.

¹ Bland-Sutton: *Tumours, Innocent and Malignant*, sixth edition, p. 512.