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## ORIGINAL COMMUNICATIONS.

SPRUE: A CLINICAL LECTURE DELIVERED AT  
ST. BARTHOLOMEW'S HOSPITAL. ✓

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GENTLEMEN,—If you go into Rahere Ward and look at two patients—one in the State bed, the other in adjoining bed—you will find two cases which resemble one another in a good many respects, although they differ very much in some most essential features. You will find that both men are lying flat on their backs, looking apathetic. They do not care to move, their faces are thin and their eyes seem to be falling into their sockets; but if you go into the cases a little more fully, and read the descriptions at the heads of the beds, you will find that the case in the State bed has lasted for years, and the case in the adjoining bed has lasted only for a few weeks. You will also observe that the case in the State bed is one where there has been little or no rise of temperature; that the temperature, indeed, has been, as a rule, subnormal, whereas in the other case the temperature has been much above the normal. The case in the State bed is one of a somewhat rare disease in this country, namely, sprue, and that in the adjoining bed is one of typhoid fever. Both those diseases are characterised more or less by diarrhoea, but the diarrhoea in both may be to a certain extent absent.

Sprue is a disease, as I have said, which is somewhat rare. Cases resembling it are exceedingly common in foreign countries, more especially in India, in Ceylon, in China, and in the Straits Settlements, but when you come to look up the literature on the subject, you will find that there is a considerable difference of opinion as to what sprue is.

There are two diseases about which authorities are disagreed, but upon which the community seem to be in accord in dividing

from one another, although medical men are inclined to regard them as one. These are the diseases known popularly as "Ceylon sore mouth" and as "hill diarrhœa." Now, the reason why the populace have divided those diseases from one another is because the symptoms are more prominent in the mouth in the so-called Ceylon mouth or true sprue, and in the intestine in the Indian hill diarrhœa.

In the early stages of sprue the mouth is very sore, and very frequently also the anus is affected, although there may be at the time not much diarrhœa. In the case of the Indian hill diarrhœa, on the contrary, one may find that the mouth is not affected, while the diarrhœa is very well marked. Although, however, one is able to distinguish these two prominent symptoms, yet the two diseases may run so into one another that it is exceedingly difficult, or it may be impossible, to differentiate them, because in Ceylon sore mouth, as a rule, the soreness of the mouth is either succeeded or accompanied by diarrhœa, and in the later stages of the so-called Indian "white" or hill diarrhœa the mouth may also become affected; so that, if you take at one particular moment a case of Ceylon sore mouth or sprue, and Indian hill diarrhœa, you might be unable to say which was which. More than that, I think you will probably find, on examination of the case which we have in the wards, that although it was diagnosed when he came in as a distinct case of sprue, you would very likely diagnose it, if you were to go to it now without any history of the case, as one of Indian hill diarrhœa, the reason being that when he came in there was a well-marked affection of the mouth, which has now subsided, although the condition of the intestines remains.

Now, in both those conditions, which, as I have mentioned, it is so hard to differentiate, we find one common characteristic in the nature of the diarrhœa—it is that, as the popular name of the Indian affection implies, the stools are white. In sprue we find that the stools have certain well-marked characteristics; they are, as a rule, liquid, white, and frothy, the froth showing that some fermentation is going on in them. They are also frequently offensive, but they may not always be so. The characteristics, then, of a well-marked case of sprue are:—(1) That the mouth is sore; (2) the anus is sore; (3) there is well-marked diarrhœa, the stools being of a liquid, white, and frothy nature.

In Indian hill diarrhœa the same character of the motions obtains, but you do not find the condition of the tongue, the mouth, and the anus to the same extent. The consequence of such an affection is necessarily malnutrition of the patient. The patient's body loses weight, his muscles lose strength, he is disinclined to move, as you will see from the patient in Rahere Ward. He looks shrunken, and, more than that, his mental and nervous systems seem to fail to a certain extent also. He is rather apathetic, does not care to move, does not like to be

tormented with questions, and possibly, if you do trouble him much with questions, you may find that he is just a little irritable. However, all these are, I think, only secondary to the malnutrition, and as patients who suffer from this disease begin to recover, both their bodily and mental condition improves.

There are some other conditions in which this whiteness of the motions is found, which has been a very great stumbling-block to many people, who have been quite unable to explain the whiteness. In the case of most of them, the whiteness is due, not to absence of bile, as one would expect, but to the presence of undigested fat. You may get complete absence of bile where there is no diarrhœa. One of the most remarkable instances of this sort that I have ever seen was in a patient whom I saw just ten years ago. He had been a good long while in Calcutta, and suffered from ague. The first symptom that he noticed, in January 1885, was absence of bile from the motions, although at that time there was no diarrhœa—the diarrhœa first making its appearance in May 1885. He got very much worse, very weak, and came to this country, where I saw him in consultation with Dr. Lime Stevens. He was then passing motions of a very peculiar character. They were as white as arrowroot, but they were tougher than ordinary formed motions, so much so, that instead of breaking into pieces they fell into a very peculiar shape. They really looked like a snake coiled up, with the head projecting, just as if ready to strike. I should say that this gentleman was at the time upon milk diet, and the apparent absence of bile from the motions sorely puzzled me, because there was no jaundice of the skin, no darkness of colour in the urine. I thought that the liver in some extraordinary way must have had its function abolished, but I got an analysis made of the fæces by Dr. Sidney Martin, who found that the liver was doing its work, and that the motions did contain bile, although in small quantities. Biliverdine was present in an unaltered form, though only an indication of biliary acids could be obtained. If we had found the opposite of that, namely, if we had ascertained that bile acids were abundant, but that only a trace of colouring matter was present, we would not have wondered that the motions were white, but it was not so. The bile acids seemed to be diminished, but the bile pigment was present in an unaltered form. The reason of the motions being so white was that the fat in the milk was not digested, and therefore it appeared in the motions. In the case I have just alluded to, it would seem, then, that the starting point of the disease was rather in the absorption from the digestion of fat, and that this occurred four months before there was any indication of diarrhœa. This is, I think, interesting in regard to the pathology of the disease, which we shall presently have to consider, because in most cases the pathology of the disease is said to depend upon the alteration in

the intestine. This, no doubt, is a very important point, but I think that the want of change in the fat points also to some extent to an alteration in the pancreas.

On looking at the symptoms more closely, we find that the changes in the mouth are apparently of an aphthous nature; that you see on the tongue, first of all, a certain amount of redness and congestion. Then this redness becomes patchy, and is found to surround little vesicles. These burst and then ulcerate, and these ulcerative portions may run into one another; in this way more or less biggish ulcers may appear upon the tongue, and in many cases they are seen on the outside of the lips and inside of the cheeks. Thus we get what is known as the Ceylon sore mouth. The mouth is so exceedingly tender that the patients cannot bear to chew much, nor can they bear anything that is in the least irritating. For example, they cannot touch even diluted spirit or wine, on account of the soreness it causes. Pepper, condiments of all sorts, and even salt, they are obliged to go without. This tenderness of the mouth is not limited to the mouth and tongue. It goes apparently down the œsophagus, so that on taking anything irritating or hot they feel the pain or burning right down to the stomach. Once it is in the stomach they do not complain so much of pain, but they may have pain more or less over the stomach and abdomen. Then again, coming to the next region supplied by spinal nerves—to the anus—they complain of pain there. The changes that are noticed in the mouth, in the œsophagus, and in the intestine, are first of all apparently denudation of epithelium. The mouth becomes more or less denuded of epithelium, as is shown in one of the sections which Dr. Sandiland has kindly lent me, and which I show you under the microscope; you will see that the ordinary epithelium is almost entirely absent, or represented only by one layer of epithelial cells. The same denudation of epithelium appears to occur in the gullet, but does not seem to occur in the stomach, at least to any great extent. In the small intestine it is much found, and there you will also find a very peculiar condition. This bared intestine is covered with a layer of mucus. The whole intestine, moreover, seems exceedingly thin, almost translucent. I remember being very much struck by a case which I saw many years ago, and which I did not diagnose. I suppose it is now nearly twenty years ago, and at that time very little was written about sprue. It was the case of a captain who had spent many years in the China seas. He had suffered from dysentery, and returned home and settled down in a small house near Mitcham Junction. He had chronic diarrhœa, with a good deal of pain in his abdomen. I tried all sorts of things, but the diarrhœa would not yield, and finally he died of exhaustion. My diagnosis was that the case was one of chronic dysentery—diarrhœa consequent upon an acute dysentery—and that probably I should find in the

intestine a number of ulcers. To my astonishment I found that there were no ulcers in the intestine, and when I took the small intestine out, it looked like a bit of bladder. It was so thin, so translucent, and the surface of it looked as if the whole thing had been shaved with a razor until all the villi had been taken off, and it had thus been rendered quite transparent—in fact, as if it had been prepared in imitation of a bit of parchment for writing upon. Now, it is this bare condition of the intestine, of the tongue and of the œsophagus, this denudation of epithelium, which has led Dr. Thin to give the name of *Psilosis linguæ* to it. This term, as you see, is the expression of an acute disease, and intimates that Dr. Thin considers this sprue to be entirely distinct from hill diarrhœa; but it is exceedingly difficult to be quite certain of the diagnosis in particular stages of the disease, and you can only diagnose them by paying attention to those points which are prominent in the ordinary names given to diseases by the lay public, namely, the soreness of the mouth in the case of sprue, and the absence of this in the case of hill diarrhœa. We know diarrhœa is a common symptom in both.

The prognosis in both diseases is bad if they are left alone. The patient is very apt to get weaker and weaker, and finally to die. Nor is the fatal issue, as in the case of my first patient, to be averted by the use of drugs, unless you put the patient on a particular diet at the same time. The diet, which is a *sine qua non* in treating either hill diarrhœa or sprue, is an entirely milk one. It is the same diet that we use in cases of typhoid fever; milk, and nothing but milk. The next question comes to be, how much are you to get the patient to take? Well, the answer is, get him to take as much as ever he can. A large proportion of the milk will almost certainly pass unabsorbed through the intestine, more especially will the fat not be absorbed. The sugar of milk and the proteids are absorbed to a great extent, but the fats are not. By giving him a large quantity of milk you will probably be able not only to maintain his strength, but to increase it, and after a certain length of time the patient will get well. That they do recover I know, because I have here the notes of another case where the symptoms were well marked, and where the patient, after being put upon a milk diet for a length of time, became first of all greatly improved, and now I hear is completely well, although he is a somewhat elderly man. But just as in cases of typhoid fever, patients sometimes cannot take milk, or milk is insufficient, so it is in cases of sprue. What is to be done in such cases? Well, if you cannot get enough milk down, you may try the effect of giving along with it some beef juice, or you may try the effect of putting the patient entirely upon meat juice. This treatment was actually tried, with benefit, in the case that we have here; the notes of which I shall presently read.

In addition to this, however, you may give them a medicine

which is very useful, and in the case that I mentioned a little while ago, where the bowels were not very loose, but where we had that peculiar form of motion, the medicine that was most useful was a preparation of bismuth, with the addition of some *cannabis indica*. This addition was made to it by Dr. Maconnel of Calcutta, whom I saw in consultation in regard to the case. Dr. Maconnel, who has unfortunately since died, told me that this was a formula that he had used very much in the treatment of hill diarrhœa in India, and had found it, upon the whole, to be one of the most successful. I will just write it down, because many of you may go into the army and go out to India, and may have to treat such cases. The first thing you have to do is to put your patient upon a milk diet. If he cannot take very much milk, put him to bed, so that you take nothing out of him, and put everything into him. If he can take a lot of milk, you may possibly allow him to go about; and in one case which Dr. Thin treated, and which I saw on one occasion during his absence from town, the patient was on a milk diet absolutely for three months. In that time he laid on flesh, although he was attending to his duties as a director in a city company several times a week. The prescription I have referred to is:—

R	Bismuth. carb.	.	.	gr. x.
	Sodii bicarb.	.	.	gr. x.
	Tinct. cannabis ind.	.	.	minims v.
	Mucilag. tragacanth	.	.	ʒi.
	Aq. cinnamon ad	.	.	ʒi.

You must be careful not to forget to add the tragacanth or acacia, for *cannabis indica*, as you know, owes its activity to a resin, and when you mix the tincture with water, as you will do in making up a mixture, the resin will be precipitated. This mixture may be given every three or four hours, or even oftener.

In most of the cases we have been discussing, the liver is not found to be much enlarged, but, if anything, it has a tendency to be small. This is, however, not always the case,—at least, not in hill diarrhœa. A man, æt. 35, consulted me in July 1888. He had been out in Afghanistan eight years before he came to me, was attacked with diarrhœa in 1880, and had suffered more or less from it for the last eight years. When I saw him he had been stationed for a couple of weeks at Colchester, and had been suffering very much from a recurrence of the diarrhœa. In his case there was a slight enlargement of the liver. I put him upon this mixture, and I also gave him some blue pills to try and act upon the liver, because it seemed to me that if there was any congestion of the liver it would tend to keep up the diarrhœa. He was not getting on quite satisfactorily, and I said to him, “There is one thing I should like to do, but I do not care to do it without a consultation.” It seems so very absurd to give a man who is suffering from chronic diarrhœa, lasting several years, a

violent purgative, and yet I said, "I think, before we can do much, we will have to unload your liver; but before we do so, I think we had better see Sir Joseph Fayrer." I took him to Sir Joseph, who quite concurred in my view, and said, "It is the best thing you can do." Sir Joseph prescribed that he should have a blue pill every other night, a drachm of sulphate of magnesia, a drachm of sulphate of soda, ten minims of dilute sulphuric acid, two grains of sulphate of quinine, and an ounce of compound infusion of gentian, every morning at seven o'clock, after the pill. Well, this cleared him out very thoroughly. The addition of the quinine and the sulphate of iron to the sulphate of magnesia and soda seems to make them much more efficacious, and the consequence was that the patient's liver went down very quickly, and after the liver had been disgorged, we found that the medicine he had been taking before began to act, and in a short time the patient got perfectly well.

I will shortly read the notes of the case which we have now in Rahere, so that you may be able to look at it with some interest.

CASE I.—The man, *æt.* 35, had a long field-day in April 1896, in the course of which his company passed some stinking cesspools. From that day up to November 1896 he had irregular diarrhœa, but the stools were dark in colour; he had no soreness of the mouth, and no dyspepsia. About 17th November his regiment moved to Secunderabad, where he at once began to suffer from great soreness of the mouth. It lasted for about three days, and then he began to suffer from a fresh attack of diarrhœa. The stools were now for the first time white and frothy. With the diarrhœa, the patient had great pain in the epigastrium and over the lower end of the sternum. His abdomen became swollen; he had attacks of vomiting, and acid burning eructations rose at different times into his mouth. This is not quite the typical beginning of sprue, because in many instances the disease comes on very insidiously, whereas here it came on rather sharply. It did not come on when he reached Secunderabad, but really while he was on the way from Bellary to that station. The condition of the mouth quickly improved, and all the soreness had gone in seven days from the onset of the attack. From 9th November the diarrhœa continued up to present date. At times he was passing twenty motions a day. On 25th March 1898, he was admitted into Netley Hospital, where he improved on a diet of milk, eggs, and brandy. He came into St. Bartholomew's in May, and at that time the surface of the tongue, with the exception of a strip in the centre of the dorsum, was bright red, smooth, shiny, and moist. The bright red colour, the smoothness and shininess, along with the character of the motion, would at first incline one to regard the case as being one of sprue, but if you look at his tongue now, you will notice that it has not got this shaved appearance; the papillæ are not so large as they would normally be. The tongue is somewhat smoother than it ought to be. A central strip, about an inch in breadth, is covered with a dirty thin fur, and presents normal filiform papillæ, which elsewhere are absent. The buccal surface of the gums of the lower jaw and

mucous membrane of the lower lip are bright red, moist, and shiny. On the lower lip, opposite the second incisor tooth on the right side, is a white patch of coagulated inflammatory exudation about the size of a pea. The white patch is surrounded by an area of deep crimson. The pillars of the fauces and the tonsils are injected and somewhat swollen. They show no ulceration. The liver was unchanged in size, and cardiac dulness is somewhat masked by the stomach resonance; it commences at the fourth rib. The abdomen is distended, soft, and tympanic all over.

That was practically the whole of the condition of the patient at the time of admission, and you will see that there is very little difference now.

The only point I wish now to mention is as to the treatment of the sore mouth and the soreness of the anus. The sore mouth may be treated with a good many different things. One is rather tempted sometimes to give some of those little tabloids, consisting of compressed chloride of ammonia, or chlorate of potash, but the difficulty about that is, that if you put one of them into the mouth it hurts too much, because, as it is dissolved by the saliva, the solution thus made is too strong. But you may use a diluted solution of chlorate of potash or borax, say five grains to the ounce, quite easily, and this sometimes relieves the patients very much. A dilute solution of bicarbonate of soda seems to help a good deal, because the bicarbonate of soda neutralises any acid that may be present in the mouth, and lessens the soreness of the tongue. Lime water also may be used as a mouth wash. The soreness of the anus may be relieved, or perhaps entirely removed, by the use of various ointments,—an ointment containing bismuth, for example, especially bismuth made up with lanoline. I do not know what the composition of *homocœa* is, but one of my patients, who came from Ceylon, told me that he found this preparation almost invariably relieved the soreness which occurred in the disease. If you find that the bismuth alone is not going to act, you may then put in a small proportion, say one part in twenty, of calomel ointment, or else of *unguentum hydrargyri ammoniati*, into the mixture of oxide of zinc and lanoline. There is one point I have forgotten to mention in regard to the non-absorption of the fat. This might be due in great measure to the absence of the bile, but the absence of the colour in the case I referred to, Mr. M., where the stools began to get white three months before diarrhœa came on, seemed to point rather to some obstruction of the pancreas, and the reason that one is inclined to attach this condition of pale stools to alteration in the pancreas is, that some years ago Dr. Walker of Peterborough read at the Medico-Chirurgical Society notes of a case of white stools lasting for several years, and with no apparent impairment of the patient's health, but where after death the pancreatic duct was found to be completely obstructed, so that it would seem that in such a case as Mr. M.'s it was not

the liver that was at fault, but that the pancreas had struck work, and for some reason or another the secretion had not been poured out into the duct. In consequence of this idea, some maltine was given to the patient, in order to supply a dietetic ferment, and on this treatment he improved more than upon the milk alone. In the case at present under treatment we are giving milk with liquor pancreaticus, with the idea of trying to supply a ferment which may possibly be absent.

In post-mortem examination it has been found that the pancreas is also somewhat affected, and that there is a great deal of increase in fibrous tissue, and very often vacuolation and disintegration of the cells forming the secreting structure of the pancreas. In the microscopic sections you will find first of all absence of epithelium in the tongue, and a section of the ileum shows thinness of both the muscular coats, with degenerative changes in the muscular cells. In both the ileum and in the tongue this denudation of epithelium is observed, and on the ileum one generally finds also a thick coat of mucus all over the surface.

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## INJURIES AND DISEASES OF THE CONJUNCTIVA.<sup>1</sup> ✓

BY A. MAITLAND RAMSAY, M.D., *Ophthalmic Surgeon, Glasgow Royal Infirmary, etc.*

As the eyes occupy a prominent and exposed position upon the face, nature has done much to protect them from injury. Their rounded shape enables them to be moved by their muscles freely in all directions in the cavity of the orbit, while they rest upon and are surrounded by a quantity of fat, which acts like an elastic cushion, and deprives direct violence of much of its force. The margins of the orbital cavity, especially the overhanging frontal border, with its projecting fringe of eyebrows, also afford a strong protection, while the busy winking of the eyelids prevents the slightest particle of dust from adhering to the cornea, and so keeps its surface constantly clear and bright. When this unconscious winking does not take place, as in paralysis of the facial nerve, the surface of the cornea rapidly becomes dull and dry, and even ulcerates, as a result of constant exposure. Should any danger threaten, the eyelids are instinctively closed, and the eyeball is at the same time turned upwards, so that the cornea may be specially well protected behind the upper eyelid. When any foreign body, such as a particle of dust or a small fly, manages to evade the watchful guard of the lids, and get inside, the nervous apparatus immediately comes to the rescue and sets to work to bring about the expulsion of the intruder. The fifth

<sup>1</sup> A post-graduate lecture delivered at the Ophthalmic Institution, Glasgow, 14th November 1899.