LATENT DYSENTERY, OR DYSENTERY CARRIERS IN SARAWAK, BORNEO.

BY

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EVERYBODY understands by the use of the word "dysentery" that patients have loose stools, with blood and mucus, but my experience in Sarawak is that many people, white or native, may become thin, pale, wasted and weak with what is practically dysentery, without having loose stools or blood or mucus. In such cases I have found abundant amoebae of the *histolytica* type; and when these were cleared out by a few injections of emetine, with saline treatment, the condition of debility, pallor, and wasting disappeared.

The more one searches the more prevalent does one find this condition of amoebiasis. In imported Tamils I have found amoebae in 100 per cent. of the cases. In other batches 80 per cent. were infested with them, and some have developed acute dysentery and died after arrival, thus proving that the amoebae were pathogenic.

Of Javanese in hospital, not admitted for dysentery, I have found 25.4 per cent. with amoebae; and in a new batch of 16, just imported, 56 per cent. had amoebae and 43 per cent. had ankylostomiasis.

Among Malays examined (only three to date) amoebae were found in all, yet they showed no signs of dysentery. It is true that ankylostomiasis was also present. There is a suspicion that Malays who live by the river, and drink its water, into which of course all their sewage runs, are infected with amoebae, ankylostomiasis, and filaria. Research is being made into their condition.

It is very probable, however, that much of the debility, invaliding, anaemia, and "fever" put down to malaria, which is rare here, is due to the septic, irritated condition of the colon in patients infested with amoebae who show no signs of blood or mucus in their stools till they reach an advanced stage of ulceration.

The following statistics from our laboratory may prove this contention:

During nine months since August, 1913, of 554 cases admitted to Sejjak Hospital, 65 were dysentery carriers and 19 others had the usual signs of the disease. Thus there were 12 per cent. of carriers of latent dysentery and 3.4 per cent. of actual cases.

100 Unselected Cases (April and May, 1914) of all kinds.

Amoebae were found in ...	...	...	34 per cent.
Trichomonas in ...	...	...	13 "
Ankylostomiasis in ...	...	...	40 "
Round worm in ...	...	...	24 "
Whip worm in ...	...	...	44 "

Analysis by Nationalities of 100 Consecutive Selected Cases admitted to Sejjak Hospital during May, 1914.

Nationality.	Amoebae Found.	Amoebae not Found.	Total.	Percentage Found.
Javanese ...	16	47	63	25.4
Tamils ...	11	2	13	84.6
Chinese ...	2	12	14	14.0
Dyaks ...	0	2	2	—
Malays ...	3	0	3	100.0
Europeans ...	2	3	5	40.0
Total ...	34	66	100	34.0

In none of these cases was dysentery suspected, nor was blood found. Of the three Malays who complained of pain in the stomach, not only was amoeba found, but trichomonas and ankylostoma as well. In one case *Filaria nocturna* was in the blood at the same time.

Sarawak is nevertheless a healthy country. The reasons are no doubt: (1) The large rainfall (220 in. last year); (2) the cool monsoon breeze; (3) the reduction of malaria by rubber-planting and clearing; (4) the infrequency of cholera, enteric fever, and small-pox; (5) the absence of trypanosomiasis and plague. The temperature also rarely rises above 90° F., and is usually 78° to 80°

in the shade. Although the thermometer may reach over 100° in the sun, heat-stroke is rare. For the equatorial region, therefore, Sarawak may be considered one of the healthiest places, in spite of amoebiasis. Although the death-rate is low, I have found Europeans and natives feeling "rotten," as they call it, or suffering from neurasthenia, who became fit soon after the amoebae were cleared from the colon and the resulting colitis and septic state had been cleared up. It used to be common for patients to attribute everything to a "touch of fever" and to take quinine; but I have found that calomel and saline are much more effective.

The actual death-rate of our hospitals only reached 3 per cent. on all cases, and the three deaths we had out of 33 cases of acute dysentery were due to the fact that the estates were caught by surprise and the cases came in a dying state. After we got emetine and cases in the first stage we had no deaths.

Conclusions.

1. That 30 per cent. or 40 per cent. of the entire population are dysentery carriers.
2. That the examination of them early and treatment with saline clears the colon of amoebae and prevents dysentery.
3. That much invaliding and debility are due to latent dysentery.
4. That the amoeba is of one type and cannot safely be pronounced non-pathogenic at any time.
5. That emetine is most valuable in obstinate latent cases, and is essential in dangerous, acute, amoebic dysenteries, robbing them of their terrors.

THREE CASES OF INFECTIVE ARTHRITIS TREATED BY SPECIFIC METHODS.

BY

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ACUTE arthritis is a common disorder, but it is not always traced to a definite local infection of the joints. Infections of joints due to the *Bacillus tuberculosis* and the gonococcus are of frequent occurrence, and cases of pneumococcal and streptococcal infection are occasionally met with. In many other forms of arthritis infection of some kind is suspected and probable, but it is often difficult to demonstrate conclusively the presence of any organism. In the following cases a bacteriological diagnosis was made with certainty, and beneficial results were obtained in each of them by specific therapy. The term "bacteriological" is here used to include the diagnosis of syphilis.

There are three methods by which a bacteriological diagnosis may be made in any case of infection: the first is the recovery of infective organisms from the lesion; the second is the recovery of such organisms from a site remote from the lesion, but so situated that the connexion between the two sites is clear; and the third is by means of "reactions," by which is meant the demonstration in the patient's blood of bodies which have a recognized bearing on some organism of known infective properties. The cases here reported illustrate each of these methods.

CASE I.—*Staphylococcus*.

Parlourmaid, aged 42. The patient had been long subject to slight rheumatic pains in many joints, especially the right knee, and had had one severe attack of rheumatism in this joint six years before. In January, 1914, while suffering from slight pain in the right knee, she was out of doors in rainy weather; during the following week this joint became very painful and was much swollen, and three weeks later she was admitted to Westminster Hospital.

On admission the joint was very swollen, and so painful and tender that the patient had had no sleep for three nights. The joint was much distended and was held in a semiflexed position; it was punctured and some opalescent fluid was withdrawn, which contained numerous leucocytes and yielded a pure culture of *Staphylococcus aureus*. The joint was aspirated and emptied as far as possible. An autogenous vaccine was prepared; the patient was inoculated, and in due course extension, massage and passive movements were employed. The result was very satisfactory and ended in complete recovery.

There were some points of interest in connexion with this case. There was no history of trauma nor any

evidence of abrasion of the skin, and the patient did not appear to be suffering from septicaemia, as there were no abscesses elsewhere and the general condition was good. There was, however, the scar of an old operation for osteomyelitis on the tibia immediately below the joint; this operation had been performed thirty years before, and the question arises whether the joint could have been infected from this source. The joint infection was not virulent, and there was no tendency to point; the fluid aspirated was very thin pus, and recovery was complete even in so vulnerable a structure as the knee-joint. It seems probable, therefore, that the infection was of a very mild character, due only to an attenuated organism. Thirty years is a very long period for organisms to persist in the body without giving rise to symptoms, but in this connexion a case reported by Mr. Tubby and Dr. Braxton Hicks is of interest.¹ Their patient had an attack of suppurative osteitis from which the *Bacillus typhosus* was recovered thirteen years after an attack of enteric fever. In such a case independent infection is most improbable, since the *Bacillus typhosus* is of comparatively infrequent occurrence. If, then, an organism can be proved to have survived within the body for thirteen years, there is no obvious reason why it should not continue to survive for thirty.

CASE II.—*Streptococcus*.

Male, aged 40, under the care of Dr. T. A. Durrant, was seen on the recommendation of Dr. Luff. Dr. Durrant reported that the patient was suddenly taken ill with sore throat, a temperature of 102°, and symptoms of influenza, which were followed on the second day by pain and redness in the metatarsal joints of the right foot, and on the third day by swelling and redness of the left ankle, and stiffness and pain in the right shoulder. There was persistent variable temperature for seventeen days, and a fall by lysis succeeded by periphrigetic pain and thickening along the course of the left saphenous vein.

Cultures were made from the blood, the throat, the faeces, and the urine. The throat was still inflamed, and many organisms were obtained from it, with a preponderance of streptococci. The faeces showed numerous cocci in the film, and streptococci were obtained in unusual number on culture. The urine yielded a diphtheroid bacillus, but no streptococci. The blood: About 6 c.cm. were withdrawn from a vein and distributed among six broth tubes, each of which yielded streptococci. A vaccine was prepared from the blood culture, and Dr. Durrant reports that there was rapid diminution of objective conditions from the use of the first inoculation, and the patient made a complete recovery.

This case is an instance of the isolation of pathogenic organisms from a site remote from the lesion. Since they were obtained from the blood, which is normally a sterile fluid, there was strong presumptive evidence that they came from the same source as those causing the symptoms of which the patient complained; the blood is the most satisfactory site from which to obtain organisms in such cases. In the event of the blood being sterile, other sites have to be investigated: for instance, in a case of arthritis, the presence of gonococci in a urethral discharge is strong presumptive evidence that the joint infection is also gonococcal. Similarly, a pneumococcal or typhoid arthritis may be inferred when the joint condition supervenes on pneumonia or enteric fever, in which the specific organisms have been demonstrated. In the present instance, if the blood culture had been negative, it would have been worth while to attempt inoculation with the streptococcus from the faeces, but since this organism is commonly present in stools there would have been greater risk of failure; this applies with still greater force to those obtained from the throat. The case is especially interesting because it is very rare to obtain a positive blood culture from a patient in whom arthritic symptoms predominate.

CASE III.—*Syphilis*.

Male, aged 35, under the care of Dr. Hildesheim, of Northwood, was admitted at his request into Westminster Hospital. The symptoms were not primarily those of arthritis. The patient had worked in many parts of the world, especially in the tropics, and had undergone much hardship; he had been invalided from the Johannesburg mines with the diagnosis of phthisis, but tubercle bacilli had not been found in the sputum. He had recently been invalided from the West Coast of Africa with persistent headache, great depression, and serious loss of weight. About the time of his admission to hospital he developed a sudden painful swelling of the right knee, which was distended with fluid; it was not hot, nor inflamed in the ordinary sense, but so painful as to prevent sleep. It was not acutely tender, and some degree of passive movement was permitted. Extensive pathological observations were made by Dr. Braxton Hicks to exclude malaria and other tropical

diseases, with negative results; the blood, however, gave a positive Wassermann reaction, confirming a diagnosis of syphilis provisionally made on clinical grounds by Dr. Hildesheim. Injections of salvarsan were given with immediate relief of the symptoms in the right knee. There was some recurrence in a day or two, but this was followed by rapid improvement, and on leaving the hospital the patient, though far from recovered in general health, was able to walk in comfort.

Syphilitic arthritis of the type here described is not very common. Fournier² describes a type similar to acute rheumatism, chiefly affecting the knee, in secondary syphilis, and also painful joints without physical signs of disorder, and painless hydrarthrosis. Adami and Nicholls³ describe serous synovitis in secondary syphilis, and state that it occurs occasionally in the tertiary stage. This patient had no knowledge of infection; he stated that he had not been exposed to risk for more than a year, and he showed no other secondary symptoms, so that the lesion was probably tertiary.

In this case the diagnosis was made by a reaction, and improvement followed treatment. It should be noted that the specific diagnosis of syphilis is not comparable to the diagnosis of bacterial infections by agglutination, bacteriolytic or opsonic tests, nor is treatment by salvarsan comparable to inoculation with vaccines or serums. It was long held to be an axiom that while bacteria could be cultivated and their infections treated by methods intended to raise the patients' resistance to them, no drugs capable of oral or subcutaneous administration had any bearing on them, but, on the other hand, the protozoa could not be cultivated, while many of them were susceptible to treatment by drugs. That is still largely true, but recently it has been possible to cultivate a few of the protozoa, and Professor Morgenroth has made observations which show that an organic salt of copper has a definite effect on the pneumococcus in the tissues.⁴ The Wassermann reaction depends on a fortunate accident, but all observers agree that it has high specific value in syphilis; it differs from the antibacterial blood tests in this, that the "positive reaction" disappears with successful treatment, whereas in recovery from bacterial infections, whether spontaneous or induced, the reaction, which is evidence of resistance, becomes for a time intensified; the reason is that the treatment by salvarsan is the application of a specific poison to the invading organism, and not a stimulus to the body to produce antibodies.

These cases all show the value of accurate bacteriological diagnosis in specific treatment, which is otherwise purely empirical, and has then no advantages over other empirical treatment. Where vaccine-therapy is employed without such a diagnosis, which often cannot be made, it is necessary to make a guess at the infecting organism, and though such guesses are fairly often successful, they are necessarily attended by very many failures. The essentials of success in vaccine-therapy are three—the employment of the right organism, the use of suitable doses, and, thirdly, the power of the patient's tissues to respond to the stimulus of the inoculation. The last can never be guaranteed, but accurate bacteriological diagnosis secures the first of the three essentials.

The prognosis in staphylococcal and streptococcal arthritis is not very good, and frequently ends in permanent damage, more or less serious, so that complete recovery is to be looked upon as a very fortunate result.

REFERENCES.

- ¹ Case of Suppurative Post-typhoid Osteitis, *Lancet*, February 1st, 1913.
- ² *Traité de syphilis*.
- ³ *Principles of Pathology*.
- ⁴ Sir A. E. Wright: Pharmacotherapy of Pneumococcus Infections, *Lancet*, December 14th, 1912.

THE *Australasian Medical Gazette* states that South Australia was the first State in Australia to erect a crematorium. The crematorium attached to the West Terrace Cemetery was built in 1901 by a number of private persons interested in cremation, as opposed, on sanitary grounds, to earth interment. The structure, which cost about £2,000, was erected on land allotted by the Government. The crematorium had been erected a long time before it was first utilized, and in 1903 the promoters handed it over to the Government. The first cremation was that of the body of a Sikh, on May 4th, 1903. The first white man cremated was the late Dr. Shand, of Port Elliot, on October 30th, 1903. So far there have been 63 cremations at West Terrace, 13 of them in the past twelve months.