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Contributors

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THE EPIDEMIC MALARIAL FEVER OF ASSAM,
OR KALA-AZAR, SUCCESSFULLY ERADICATED
FROM TEA GARDEN LINES

Leonard ROGERS

British Medical Journal, 1898, ii.



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My experience leads me to differ from all these writers in regard to ipecacuanha being useless. In the course of my long service in various parts of the East, Ceylon among the rest, I have found it most valuable in cases of acute tropical dysentery. In a pamphlet published in Rangoon in 1870, and in subsequent papers in the *Indian Medical Journals*, the *Lancet*, and *BRITISH MEDICAL JOURNAL*, on the Treatment of Hepatic Disease by Chloride of Ammonium, I pointed out, not only the special curative action of the ammonium chloride in congestion of the liver and other hepatic affections, but its efficacy also in dysentery, more especially when that disease was dependent on hepatic trouble, simple enlargement, hepatitis, etc. In my pamphlet I gave the case of an officer who was invalided from the Andamans on account of dysentery, and who *en route* to England came under my care at Rangoon. In his case ipecacuanha and other treatment had failed, the dysentery being the result of hepatic and portal congestion. One or two doses of chloride of ammonium relieved him of all his distressing symptoms; the salt acted characteristically and effectually. Indeed, he was so well in the course of a few days that he was undecided whether he should take advantage of the leave granted him for the recovery of his health.

At p. 25 of my book on the *Treatment of Hepatic Disease by Chloride of Ammonium*, London, 1879, I gave an explanation of the special action of the drug in hepatic disease, and showed how a local depletion is not only effected in the congested or inflamed liver by each succeeding dose but how the entire portal circulation is relieved from congestion, preventing the occurrence of dysentery, so apt to supervene in hepatitis, and particularly in hepatic abscess. In a paper in the *Lancet*, 1891, vol. ii, p. 707, will be found my latest views on the subject. The case of the officer above described shows the value of the ammonium chloride in what may be called hepatic dysentery, and points to the necessity of a careful examination of the hepatic region in all cases of dysentery, inasmuch as the usual symptoms of hepatic congestion, pain, etc., may be masked by the severity of the dysenteric symptoms, the patient, perhaps, never complaining of liver symptoms at all. In but 1 of the 153 cases of hepatic disease (shown in Table II, p. 78 of my book, in which chloride of ammonium was persistently administered from an early period of the disease) was dysentery observed to supervene, an occurrence which under previous methods of treatment was not infrequent. Its occurrence in this instance was in all probability owing to the inflammation of the liver going on unchecked for six days after admission to the hospital through the early symptoms simulating and being mistaken for gastritis. The true nature of the disease having been ascertained by careful examination, the chloride of ammonium treatment was at once commenced. After five days (during which the remedy was persistently administered with much relief to the pain in the hepatic region and decrease of the fulness and tenderness of the right side of the chest and the abdomen) dysenteric symptoms supervened, and for three or four days the dejections were foetid and frequent, as many as seven or eight in the twenty-four hours, and this in spite of ipecacuanha administered in large doses in enemata, as there was fear of damage to the repair going on in the liver and related parts through vomiting if given by the mouth.

At length, as the patient was rapidly sinking, 30 gr. were given by the mouth, with attention to the usual precautions to prevent vomiting. The dose was retained without discomfort, and acted like a charm; from that time the patient was free from dysentery. Under the continued use of the chloride of ammonium for the hepatitis, he ultimately made a good recovery.

Here, then, we find a single dose of ipecacuanha administered with due precautions as to its being retained in the stomach, once and for all arresting acute dysentery secondary to hepatic trouble, which the chloride of ammonium failed to subdue single-handed. The older writers held that the "antidysenteric root" was less efficacious in cases of dysentery coexistent with, or secondary to, hepatic congestion or inflammation. The result attainable by the combined ipecacuanha and ammonium chloride treatment of such cases is confirmatory of this view, and offers one explanation of the apparent inutility of ipecacuanha in certain cases of dysentery—that is to say, in those cases coexistent with, or

secondary to, hepatic congestion or inflammation. Again, the uselessness of trying to cure dysentery with small doses of ipecacuanha should ever be borne in mind, for in addition to the large dose being the only effectual one, it is less likely to cause vomiting than a small one. Ipecacuanha can now be obtained from which the emetine has been extracted. It is said to act equally well in dysentery. Should this prove to be the case it will be a great desideratum.

The diseases under consideration being so often associated, and being the cause of so much sickness, invaliding, and mortality among Europeans resident in the tropics, must be my excuse for the length of this communication. The subject is one of much interest and importance in view of the great colonial expansion now taking place.

THE EPIDEMIC MALARIAL FEVER OF ASSAM, OR KALA-AZAR, SUCCESSFULLY ERADICATED FROM TEA GARDEN LINES.

By LEONARD ROGERS, M.D., M.R.C.P., B.S., F.R.C.S.,
Indian Medical Service.

THE MODE OF SPREAD OF KALA-AZAR.

I HAVE shown in my report on the diseases known in Assam under the name of kala-azar, or black fever, which has decimated a tract of the Brahmaputra Valley over 200 miles in length, that it is an epidemic malarial fever which arose owing to the intensification of that of the notoriously unhealthy district of Rungpore in Lower Bengal by an extraordinary succession of five out of six years of deficient rainfall in the Seventies. I traced its spread along the lines of communication throughout the affected districts of Assam up to the present time. I also showed that the disease is undoubtedly slowly communicated from person to person, although it is generally necessary for a person to live in the house of a sufferer from the disease, or at least to reside for some time in a badly-infected village in order to contract the fever. I also recorded my opinion that the infection (using this word in its widest bacteriological sense) is usually indirect, the virus has passed through the soil. This, it will be observed, is a very different thing to saying that it is infectious as small-pox, an opinion which some of my critics have incorrectly attributed to me. I further recorded evidence to prove that the disease has a very seasonable distribution, that of ordinary malarial fevers in Assam, and declines to a very great extent in the cold dry four months of the year, when the ground is dried up, during which time infection rarely occurs.

ADVISED MEANS TO CHECK ITS SPREAD.

On these and other observed facts I based my recommendations for controlling the epidemic, the most essential of which was that during the cold weather months when the fever was at a minimum, all the healthy people in any infected coolies' line or village should be removed to a new site, which need not be more than a few hundred yards from the old ones.

RESULTS.

Fortunately, as several medical officers of tea gardens in Assam (from whom I received much assistance in the course of my investigation) were willing to carry out my plans in anticipation of the publication of my report, I am now able to give the results of this measure, the importance of which can hardly be overrated in face of the continued spread of the disease, and the fact that although my recommendations with regard to the treatment of infected villages were sanctioned by the Chief Commissioner of Assam, but little progress has yet been made in carrying them out.

Dr. Lavertine, of the Nowgong District, writes that as yet he has only been able to carry out my recommendation that all new coolies should be placed in new lines and not in old infected ones. The result is that "there has been no case of kala-azar amongst 264 new coolies who have been up for eight months or over," and that although "we are still getting new cases amongst the coolies in old lines." He is now segregating every case of the disease and all their relations, and destroying the old houses that they occupied. This is the measure that I advised in the case of lines which were only

slightly infected. Dr. Lavertine's adoption of this measure leaves no doubt as to his belief in the communicability of the disease, which is all the more important as he has had several years' daily experience of it. The same is true of the other two medical men who have carried out these measures, and, further, they all agreed with me that the disease is entirely malarial in its origin and nature.

Dr. McIntyre, of the Mangaldai District, also writes to me that the moving of the recently-infected coolie lines on a garden he was in charge of has proved a success; but as he has since been transferred to a different part of the district, he has not been able to furnish me with any figures.

Thirdly, again I am indebted to Dr. Dodds Price, of the Nowgong District, for the following very instructive and conclusive figures, showing the good effect of moving out the healthy coolies from a very badly-infected line to a new one on a site about one-third of a mile away. As I saw this measure carried-out myself, I can testify that the new lines were on a similarly-situated site to the old ones, and the surrounding and sanitary conditions were similar in the two cases, so that any result must be due solely to removal of the coolies out of the range of infection. I cannot do better than give Dr. Price's report verbatim.

In the Old Solona lines (the infected ones) there were 240 working souls, including boys and girls, and in the lower lines 60, the latter being free people (not under contract), having lived in these lines from time immemorial, figuratively speaking. Of the 240 souls in the old lines, I found 146 either suffering from kala-azar or with it in their houses (in other words, infected people). Of these we cancelled the contracts of 17 adults and cleared them out; the remainder we sent to the infected lines at Rangamati. The 94 healthy people we drafted into the new lines at Old Solona, and all new coolies as they arrived were sent there, so that yesterday (June, 1898) the population stood at 416 souls without a single kala-azar case among them. To begin with we had one or two doubtful cases among the old line coolies, but these were immediately sent over to the camp at Rangamati. To be accurate, there were 3 cases, 2 of which subsequently died; the other 3 recovered, and were kept at and are still at Rangamati. By acting promptly we thus kept the new lines free from kala-azar, and now fifteen months since their completion there has been no death from the disease. Now, as to the 60 coolies living in the lower lines. These, being old residents and free people, could not be interfered with, and refused to be saved from themselves. Kala-azar has spread to them, and accounted for 6 deaths up to the end of the year; 2 more deaths have taken place this half, and there are 10 cases now in the lines, several of which I consider will end fatally.

Of the 129 souls that we sent to the infected lines and houses in Rangamati 8 died, 10 had their contracts cancelled and were cleared out (all of them would have died), and 23 were yesterday still suffering either from the disease or from debility after a mild attack. These people are kept entirely to themselves, and are not allowed under any pretext into the lines on the Solona side of the manager's bungalow or in the new lines we have started towards Rungagora.

From the above it will be seen that with the exception of the five cases which appeared shortly after the removal from the infected lines, and which had evidently contracted the disease before removal, there has not been one case of the epidemic disease among the 94 healthy coolies moved, although the lines in which they had lived before were so badly affected that more than half their entire population were either suffering from the fever, or had cases in their households, and over one-third of them subsequently suffered from the disease. Again nearly one-third of the old coolies living close to the infected lines suffered from the disease within 15 months of its spreading to them. The success of the measure adopted is evident, and will be very encouraging to those who have to face the suffering and loss which this epidemic has hitherto inevitably caused when once it has got a footing on a tea garden. It is also to be hoped that their success on tea gardens, where they can be easily carried out, will lead to more energetic steps being taken to afford the villages in the affected districts the benefits which the measures I have recommended will assuredly bring to them in exact proportion to the efficiency with which they are carried out, although the problem is admittedly a more difficult one in their case.

KALA-AZAR AND THE PLASMODIUM MALARIE.

Lastly, I wish to point out that the facts detailed in this paper afford strong support to my view that the infection in this epidemic malarial fever is an indirect one, by means of the passage through the soil of the plasmodium malarie which is constantly found in this disease. How the organism escapes from the body, whether by the aid of some living agent as the mosquito, or by passing out in one or more of the evacuations or secretions, or as I am disposed to believe by being breathed out from the lungs, it is impossible to say

at present. When this stage of the life-history of the organism is finally settled, then we may also hope for a solution of the mystery of the communicability of this decimating epidemic malarial fever of Assam.

REFERENCE.

¹ Report of an Investigation of the Epidemic of Malarial Fever of Assam or Kala-Azar. 1897.

REMARKS ON THE DEATH-RATE OF DYSENTERY AND ON DYSENTERY AND LIVER ABSCESS.

By W. J. BUCHANAN, B.A., M.B.,

Dipl. State Medicine, Dublin; Captain I.M.S.; Superintendent, Central Gaol, Dacca, Bengal.

THE CASE MORTALITY OF DYSENTERY.

ON reading Dr. Manson's valuable book on *Tropical Diseases*, I find he quotes 37.0 per cent. as a case-death-rate from dysentery among natives, as also does Davidson. Such a death-rate can only have reference to natives admitted to public hospitals after days or weeks of self-neglect in their own homes; it certainly does not apply to dysentery treated promptly and efficiently.

In old days dysentery used to be the opprobrium of our Bengal prisons, but within recent years great improvement has taken place. In the years 1896-7, of 7,626 cases admitted to all gaol hospitals only 293 died; that is, only 3.8 per cent. of the cases—about one-tenth of the above-quoted percentage. Even in the extremely unhealthy malarious year, 1894, I find from the figures of certain prisons which I happen to have collected, that the death-rate from dysentery was only 9.0 per cent. Such figures include all forms of dysentery, from the mild to the chronic relapsing (non-amœbic) form, which in Bengal is too often the terminal episode in many cachectic conditions—malaria, tubercle, syphilis, famine, etc. Among Sepoys—picked men in the prime of life, and living under good sanitary conditions compared with the populace generally—the dysentery death-rate is also said to be about 3.0 per cent. The explanation of these low death-rates is that in regiments, as well as in gaols, a man who is ill, being unfit for work, is at once sent to hospital and treatment begins in time; in public hospitals natives often do not come till they are in the last stage of weakness and emaciation from this exhausting and anæmia-producing disease. For a similar reason, the prison death-rate from pneumonia in Bengal is only 12 to 14 per cent.—a very low figure for pneumonia among malaria-stricken people. (Sturges gives 19 per cent. for pneumonia in England.)

LIVER ABSCESS AND DYSENTERY.

In over six years' prison experience, in charge of over 1,200 prisoners daily, I have never seen in gaol a single case of liver abscess, while I have had abundance of dysentery (I refer to natives of India only). Few natives escape dysentery; hence in them a mere history of the fact of previous dysentery is worth little in the etiology of liver abscess. Nevertheless, some French and American authors write as if "amœbic dysentery" and "tropical dysentery" were synonymous terms, though they themselves have shown that liver-abscess follows "amœbic dysentery" in the proportion of 1 case in 4. I believe the *B. coli*, the *B. pyocyaneus*, etc., are more often the cause of dysentery than the much-talked-of amœba. "Everywhere," says Davidson, in Allbutt's *System*, "natives of tropical countries are less liable to liver abscess," and we may add that everywhere they are extremely liable to dysentery. If dysentery is so important a predisposing cause, how is the rarity of abscess of the liver to be explained among natives in the Straits Settlements, West Indies, among native Egyptians, at Zanzibar, in the Seychelles, and in Brazil and Cayenne? (c. Davidson's chapter, *op. cit.*). In most of these places malaria is common and in some very severe, and in all dysentery is common. Liver abscess of pyæmic origin is certainly not uncommon outside public hospitals in India, but I am here only concerned with the fact that while dysentery has been extremely common in Bengal prisons, liver abscess has been extremely rare. A medical subordinate of mine in this large central gaol (1,200 prisoners), who has served here for ten years, has seen many hundred

