THE RESULTS OF SEGREGATION OF CASES AND MOVING FROM INFECTED SITES IN ERADICATING THE ASSAM EPIDEMIC MALARIAL FEVER OR KALA-AZAR

Leonard Rogers

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SERIES II.—*Unpublished Cases.*

Number.	Sex.	Age at time of observation.	Duration of alkaptonuria.	Family history.	Associated maladies, &c.	Results of chemical examination of urine.	Observer.
25	M.	3 months onwards	Noticed on second day of life	No known case in family — brothers and sister not alkaptonuric	Healthy. Inflammation of lungs at 2 months; diarrhœa at 10 months	Homogentisinic acid; uroleucic acid not found	Dr. Vœlcker's case.
26	M.	—	Life-long	Brother of No. 5. 3rd child	Healthy	,,	Dr. Baker's case.
27	M.	30	,,	No known case in family	Sacro-iliac and lumbar pain; floating kidney	— —	Dr. Pavy's case.
28	F.	30	,,	9th of 14 children. Sister of Nos. 29, 30, and 31	Healthy	Homogentisinic acid—proof incomplete	,,
29	M.	—	,,	11th child. Brother of Nos. 28, 30, and 31	Healthy	— —	,,
30	M.	22	,,	13th child. Brother of Nos. 28, 29, and 31	Urine supposed to contain sugar	Homogentisinic acid	,,
31	M.	18	,,	14th child. Brother of Nos. 28, 29, and 30	Refused at an Insurance Office as glycosuric	,,	,,

(For report of the discussion of this paper, see 'Proceedings of the Royal Medical and Chirurgical Society.' Third Series, vol. xi, p. 133.)

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THE RESULTS

OF

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IN

ERADICATING THE ASSAM EPIDEMIC MALARIAL FEVER OR KALA-AZAR

BY

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In a paper that I had the honour of reading before this Society in March, 1898, I gave a summary of my investigation of the Assam epidemic malarial fever, locally known under the name of kala-azar, which I concluded to be an intensified form of malarial fever, which, through a succession of very unhealthy years due to extraordinary seasonal conditions, had attained the power of being slowly communicable, usually in an indirect manner, from person to person. I propose in the present paper to give the results of my recommendations for the eradication of the disease, which were based on the above

view, as the signal success which has attended them lends considerable support to my conclusions.

These recommendations—which were omitted from my previous paper for want of spaee—were mainly as follows:

(1) All newly imported coolies should be placed in fresh lines, and not allowed to enter old infected ones.

(2) In slightly infected lines all infected persons, together with their households, should be moved out into separate segregation lines, and the huts which they have inhabited should be burnt and not rebuilt.

(3) In badly infected lines all the healthy people should be moved out during the dry cold weather months, when infection is at a minimum, and placed in new lines, while the infected persons and their households should be segregated, and the infected line abandoned.

The results which have followed the adoption of these measures on various infected tea gardens in Assam will be briefly considered under the above headings:

(1) It was pointed out in my previous paper that this epidemic fever generally lasts for some ten years in any one district, or about six in any given village, and then dies out, passing on to fresh areas. There was, however, reason for believing that it would continue almost indefinitely in the case of coolie lines on tea gardens, as fresh subjects would be introduced year by year to replace those who had succumbed to the disease. The importance, then, of placing all newly arrived coolies in fresh uninfected lines was obvious, and the instances in which several hundreds of newly imported coolies have been so isolated in separate lines, which need not be more than a few hundred yards from the old infected ones, without one of them contracting the disease in periods of a year and upwards, have already been recorded in a note in the 'British Medical Journal' of September 24th, 1898. The success of this measure is then proved, and need not be further dwelt on here.

(2) It will have been noted that under this heading it

was advised that not only those who were found to be suffering from the disease were to be removed from slightly infected lines, but also their households. The reason of this is that by the time a person, who is suffering from this form of malarial fever, has reached the stage of the affection when it is first possible to differentiate it from the ordinary non-communicable malarial fevers of Assam, he will have had fever for one or two months, and others, who are living in the same house, will be very likely to have already become infected. If they, too, are not removed a source of infection will remain, and the disease will not be controlled, much in the same way as used to be the case with regard to glanders before the introduction of mallein enabled those horses to be picked out who had already become infected, but did not yet show any clinical symptoms of the disease, yet were able to keep up the disease in a stable in spite of all clinically infected animals being slaughtered.

This measure has recently been carried out by Dr. Lavertine of the Nowgong district with the following results: In three coolie lines, the total inhabitants of which numbered over a thousand souls, seventy-three cases of kala-azar were found in May 1898, and, together with twenty-seven relatives, were removed and segregated at that time. In the next four months, including the most malarious season of the year, no new cases of the disease appeared in the previously infected lines, and at the end of November, when the fever season was quite over, only six cases of the disease had occurred in these lines since the removal of the infected people, four of these having occurred in one line from which more than half the infected people had come, and which was described as having been "formerly the hotbed of the disease;" two in another line, while the third line remained absolutely free from the affection. When it is remembered that at least one of these lines was so much affected that it was a question whether it would have eventually to be abandoned altogether, and that the season when the infected

people were removed was later than was advisable, I quite agree with the opinion of Dr. Lavertine, who writes: "I look on the measure as an almost complete success. If this had not been done I doubt if we would have had less than 100 new cases." In this instance the segregation line was about three quartors of a mile from the old lines. It may also be mentioned that thirty-five of the segregated cases had died at the time of the report, and that the rest were still under observation.

(3) The third and most severe measure is that of clearing out and ultimately abandoning badly-infected lines. The following instance in which it was carried out by Dr. Dodds Price, also of the Nowgong district, on a tea garden which had previously lost over 200 coolies from the epidemic, is of great interest and importance. The line which was dealt with was so badly infected that early in 1897, that is at the time of the year when the epidemic is at its lowest annual ebb, out of 240 souls no less than 146 either were suffering from the disease or had cases in their households. The unaffected households, numbering 94 people, were moved into a new line, the general surroundings of which were precisely similar to those of the old one, and over 300 new coolies were placed in the same line. Shortly after they were moved there five cases of suspicious fever were noticed among the 94 people from the infected lines, and these five were immediately sent back, and two of them subsequently died of the disease. They had evidently contracted the fever before they were moved from the old lines, and as a consequence of this prompt action there has not been one death from kala-azar in these new lines in a period of twenty months, including two fever seasons. On the other hand, out of the infected people nearly one third had died in the same period, while what is still more conclusive, the disease spread to another small line containing sixty time-expired coolies adjoining the old infected line, and as they were not under contract and refused to be moved, one third of them died within fifteen

months. Moreover, in another infected line on this garden, which was at first not dealt with as above, the disease continued to prevail much the same as before, until the worst part of it was burnt down and abandoned, since which the disease has also decreased to a large extent here too. Dr. Price, in consequence of the above results, which contrast very favourably with his former disheartening experience in trying to combat the disease for several years before my investigation, now writes, "I say, unhesitatingly, no half measures. Burn down the lines, alter the site, and place none but non-infected people in the new lines. By so doing, thousands of rupees will be saved on large gardens, to say nothing of the saving in human life."

The above results will be sufficient to show that the measures that I advocated have been successful in actual practice, and as far as tea gardens are concerned,—and unfortunately it is only on them that these measures appear to have been as yet actively carried out—and this fearful epidemic disease, which carries off from 70 to 90 per cent. of those attacked by it, after a lingering illness lasting usually over six months, has now been largely robbed of its terrors, and brought within the pale of controllable epidemic diseases.