

## REPRINTS AND REFLECTIONS

# Cholera and its treatment by preventive inoculation in the Darbhanga Jail<sup>1</sup>

Surgn. Capt. E Harold Brown

Civil Surgeon of Darbhanga

During a recent severe epidemic in the town of Darbhanga, cholera broke out in the jail. At first limited to an isolated case, the disease became established in a few days – not by the occurrence of several cases in one particular barrack or ward, but by single scattered cases being furnished by every building in occupation.

The cause of the first case was distinctly traced; the affected prisoner, contrary to strict orders on the point, had drunk water from the jail tank, which, on a previous occasion, twenty months ago, had given rise to a mild outbreak of cholera. This water was examined by Surgeon-Captain Green during the recent epidemic and was found teeming with comma bacilli.

No connection could be traced between this case and the subsequent ones; there was no possible chance of propagation by contact in cases 1 and 2, 2 and 3, or 1 and 3; these prisoners were as far apart, as they could be, occupying different wards at night, and being in no way associated during the day. Case no. 1 had been employed in the outside garden; No 2 had been making string in the B class yard, and No. 3 had been an inside *mehter* in the A class. Case No. 1 occurred on the 31<sup>st</sup> March, No. 2 on the 3<sup>rd</sup>, and No. 3 on the 6<sup>th</sup> of April. On the evening of the last-named day a fourth case occurred from ward No. 3, in the B class barracks, and here, again, no connection could be established between that and the previous cases. After this the admissions for cholera became numerous, there being one on the 7<sup>th</sup>, another on the 8<sup>th</sup>, and two on the 9<sup>th</sup>. There were thus eight cases up to the 9<sup>th</sup> of April; and, of these, the first seven had occurred in as many different wards in the jail. This seemed to clearly indicate not a general contamination of the food or the drinking water, but a dissemination of the poison by some agency in such a manner as to infect separate individuals or localised spots; and this dissemination, as Dr. Macrae of Gaya suggested not long ago, might have been caused by flies which, having come in

contact with a cholera evacuation, happened, subsequently, to alight either on a plate of food or a vessel of water, contaminating it.

As so many of the buildings had furnished cases, it seemed probable that there might be a general outbreak of the disease at any moment, so it was decided to evacuate the jail, and, on the 10<sup>th</sup> April, 172 prisoners were moved into camp twelve miles away, 53 being left behind, these being the sick in the jail hospital, the patients in the cholera huts, with their attendants, the old and infirm and a few cooks and sweepers.

Three fresh cases occurred in camp on the 10<sup>th</sup>, and one in the jail; on the 11<sup>th</sup>, at 2 and 4 AM., respectively, two further cases were reported in camp, the total number up to date having been 14, of which 10 had proved fatal.

At 7.30AM., on the 11<sup>th</sup>, Professor Haffkine and Dr. Green arrived at the camp and proceeded to make arrangements to inoculate such as were willing to submit to the operation. The prisoners were spoken to on the subject and seemed to be pleased with the idea, the word *tika*, which was familiar to them from its association with small-pox (inoculation), appearing to appeal to them. They were, accordingly, arranged sitting in four rows facing the tent, in front of which Dr. Haffkine was about to commence operations. I was the first subject to be inoculated and, after me, the Jailor, Assistant Jailor, Hospital Assistant and three warders. The first prisoner in the front rank was next brought up and submitted cheerfully, after which every alternate man was taken, so that no selection of cases was made until one-half of the total number were inoculated. As each man was finished with, he was taken to a place away from his original position, and, at the conclusion of the operations, there were two distinct bodies of prisoners, the inoculated and the uninoculated, numbering 83 and 81, respectively, and, subsequently, three more were added to the former list, one being an attendant on cholera cases, and two being patients with diarrhoea.

Those who had not been inoculated were far from pleased at having been passed over; and, to our

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surprise, they rose, almost to a man, and begged to be inoculated; nor were they satisfied when told that the medicine was exhausted. This clearly demonstrates the fact that, so far from compulsion being practised, or being necessary, inoculation was sought voluntarily, and the prisoners who were passed by considered that they were badly treated.

Dr. Haffkine informed me that, instead of using the small dose of emulsion which he had employed on a previous occasion at the Gaya Jail, he would inject a much larger quantity, as much, in fact, as that used by Surgeon-Captain Hare in his recent inoculations in Assam. This would obviate the necessity for reinoculation, and the result, Dr. Haffkine said, would be quicker reaction; and this certainly was the case. My personal experience was pain arising within half an hour of the operation, which steadily increased until it became very severe; fever was present within three hours of inoculation, and the temperature in my own case rose to above 104°F.; but this was probably due to the fact that I was not able to rest; for in nearly all the other cases the highest temperature recorded was 102.5°, which was about the average all these patients being at rest in bed. Before 4P.M. that day, every man who had been inoculated was in pain and had fever.

In all probability this rapid reaction meant prompt protection, as succeeding events showed. There were

fresh cases of cholera that day at 12, (noon), 6, 6, 7 and 7.30 P.M., and at midnight, all these occurring in those who had *not* been inoculated, and all terminating fatally, despite the greatest care and the most prompt and assiduous treatment.

On the 12<sup>th</sup> two further cases occurred, both among the uninoculated, and both died, there being thus eight cases in succession, all from the men who were not inoculated and all proving fatal; this showing what a malignant type the disease assumed.

There were no fresh cases on the 13<sup>th</sup>, and on the following day there were two, both of whom had been inoculated; and both of them recovered. They had been employed as attendants in the cholera tents.

The last case occurred on the 15<sup>th</sup>, the patient being an inoculated prisoner age 60, who had had diarrhoea for 30 hours, and who died the following day.

On analysing these numbers we find that, on the 11<sup>th</sup>, among 86 inoculated prisoners, there were no cases; whereas among 81 uninoculated there were six cases, or 7.4 per cent; there being six deaths, that is, 100 per cent. of those attacked.

On the 12<sup>th</sup> there being 86 inoculated prisoners present, no cases occurred among them; whereas among 75 uninoculated, there were two cases, or 2.6 per cent., with two deaths, or a mortality of 100 per cent. among those attacked.

Number present in the affected group of people		Particulars regarding the individual attacked with cholera				
Uninoculated	Inoculated	Date of attack	Name	Age	Where uninoculated or inoculated	Date of death
81	86	11 <sup>th</sup> April 1896	Sunder Dosadh	40	Not inoculated	11 <sup>th</sup> April 1896
		Ditto	Kaila Amar	60	Ditto	Ditto
		Ditto	Kali Charn	25	Ditto	Ditto
		Ditto	Mohant Sha	28	Ditto	Ditto
		Ditto	Badri Chamar	26	Ditto	12 <sup>th</sup> April 1896
		Ditto	Luchman Nunia	65	Ditto	11 <sup>th</sup> April 1896
75	86	12 <sup>th</sup> April 1896	Kurti Dosadh	55	Ditto	12 <sup>th</sup> April 1896
		Ditto	Kular Dosadh	40	Ditto	14 <sup>th</sup> April 1896
73*	86	14 <sup>th</sup> April 1896	Voghu Dosadh	45	Inoculated*	Recovered
		Ditto	Fargonah	45	Inoculated*	Recovered
66	84	15 <sup>th</sup> April 1894	Raham Ali	60	Inoculated*	18 <sup>th</sup> April 1896

\*Editors note: These have been corrected from original version.

There were no cases on the 13<sup>th</sup>.

On the 14<sup>th</sup>, two cases occurred among the inoculated whose strength was 86 or 2.3 per cent. but both cases recovered, the mortality therefore being *nil*.

On the 15<sup>th</sup>, one case occurred among the inoculated whose strength was 84, or 1.2 per cent. this case proving fatal.

In other words, the result was as follows:

*Inoculated prisoners, 86: - Attacked 3, or 3.5 per cent., deaths 1, or 1.2 per cent.; of the original number, and 33.3 of those attacked.*

*Uninoculated prisoners, 81: - Attacked 8, or 10 per cent.; deaths 8, or 10 per cent. of the original number, and 100 per cent. of those attacked.*

The accompanying tabular statement will show the results at the camp.

On leaving the camp on the morning of the 11<sup>th</sup> Professor Haffkine and Dr. Green proceeded to Darbhanga, where they inoculated 25 out of 52 prisoners. On the morning of the 12<sup>th</sup> an inoculated prisoner, who had been an attendant in the observation ward

(for diarrhoea), was attacked, and died the same day. On the 13<sup>th</sup>, an attendant in the cholera hut, uninoculated, was attacked, and died two hours later. On the same day, an uninoculated prisoner who had been under treatment in the jail Hospital for dysentery for five days was admitted for cholera dying the same day.

Date of attack	Number of uninoculated present in the affected group of people			Number of inoculated present in the affected group of people			Particulars regarding the individual attacked with cholera			Whether uninoculated or inoculated	Date of death
	Men	Women	Children	Men	Women	Children	Name	Sex	Age		
12 <sup>th</sup> April 1896	25	2		23	1	1	Kalar Dosadh	M	50	Inoculated	12 <sup>th</sup> April 1896
13 <sup>th</sup> April 1896	25	2		22	1	1	Kuski Dosadh	M	40	Not inoculated	13 <sup>th</sup> April 1896
							Golui Dosadh	M	45	Ditto	13 <sup>th</sup> April 1896
14 <sup>th</sup> April 1896	23	2		22	1	1	Tharoo Sonar	M	50	Ditto	14 <sup>th</sup> April 1896
15 <sup>th</sup> April 1896	22	2		22	1	1	Puran Gowalah	M	40	Inoculated	16 <sup>th</sup> April 1896

On the 14<sup>th</sup> an uninoculated prisoner, an attendant in the observation ward, was attacked and died the same day; and, on the 15<sup>th</sup>, the last case occurred – an inoculated prisoner who died the following day.

In other words, the result was as follows:

*Inoculated prisoners, 23: - Attacked 2, or 8 per cent.; deaths 2, or 8 per cent. of the original number and 100 per cent. of those attacked.*

*Uninoculated prisoners, 27: - Attacked 3, or 11.11 per cent.; deaths 3, or per cent. 11.11 of original number and 100 per cent. of those attacked.*

To summarise the combined results of the camp and the jail we find that of a daily average of 99 non-inoculated there were 11 cases, all fatal, or 11.11 per cent.; of 110 inoculated there were five cases, with three deaths, or 2.73 per cent.

A table showing the results in the jail is appended.

The results above recorded differ from those obtained in the Gaya Jail in one important point, viz., that at the former place the inoculations, as expected, did not become effective immediately; whereas, at Darbhanga, the much larger dose of emulsion seemed to have the effect predicted by Dr. Haffkine, for the first eight cases in succession occurred among those who were not protected. As no selection was made among those who were inoculated, cases being taken as they sat, the young and old, strong and weak being taken indiscriminately, it is significant that all these should escape completely, while eight of the other body of men, of the same numerical strength, should suffer so severely.

It is also a striking fact that, at the camp, the only two cases of recovery from cholera after inoculation occurred among the inoculated, while the only death from among the latter was an old, infirm prisoner of 60 who, before being attacked with cholera, had suffered for 30 hours from diarrhoea.

To show further that Dr. Haffkine was anxious to try the effect of inoculation over as wide a range of cases as possible, I would point out that three prisoners suffering from diarrhoea were inoculated, none of these being admitted for cholera subsequently. But I fail to understand why so large a number of attendants suffered, this being contrary to my personal experience in a large number of epidemics. It is most unusual for attendants to contract the disease; but, in the recent epidemic, three attendants on cholera patients were attacked; and two others had been at work in the observation ward where cases of diarrhoea were watched and treated.

The type of the disease was extremely malignant, 24 patients dying out of 30, a mortality of 80 per cent. In one case death occurred in an hour and a half from the commencement of symptoms, in another, in two hours, and several cases terminated fatally in three and four hours.

On one occasion I saw a particularly acute case. A batch of prisoners was returning from a bathing parade, and I happened to be on the spot as they filed into the camp. One of them, a tall stalwart Burman, suddenly reeled and fell, and I rushed to his assistance thinking he had sun-stroke; on reaching him, however, I found that he had had a profuse

motion as he fell, and it was evidently a case of cholera. He died, and Dr. Haffkine removed some of the contents of his small intestine with a pipette and, on inoculating guinea-pigs with it, found that it was extremely virulent.

The facts above noted speak for themselves. It is a pity, however, that, Dr. Haffkine was not able to

inoculate the prisoners earlier, for some may think that the number of cases recorded is too small to have any statistical value; though I am personally firmly convinced that the inoculations were protective, and that, as more work is done in this direction, the value of Dr. Haffkine's treatment will become more and more evident.