

Financial (1896) Department.

ORDINARY MS.

G.O., No. 411

Dated 19-5-97

INDEXED.

[Despatch Abstract.]

Stating that the cost (Rs. 68-4-0) of the telegram despatched to the Secretary of State for 20 pravaz serum syringes as well as all other precautionary charges incurred in connection with the bubonic plague in this presidency will for the present be debited to provincial revenues and requesting the Accountant-General to maintain separate accounts of the charges and forward a statement to Govt. at the end of each quarter.

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
2386 (19) (H.S.)	720		13/4/97				
1791/98							

Government { 1897 } of Madras.

LOCAL AND MUNICIPAL

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Recd.

Enclosures

Regd.

1897.

Spare copies

G.O., No. 887 M., 13th April 1897.

APRIL.

Bubonic Plague.

Recording, with remarks, Surgeon-Major Bannerman's report of his deputation to Bombay in connection with the treatment of the —, and ordering that a telegram be despatched to the Secretary of State for twenty pravaz serum syringes of ten cubic centimetres capacity.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following paper :—

From the Surgeon-General with the Government of Madras, dated 2nd April 1897, No. 191.

With reference to G.O., Nos. 427 and 428 M., dated 8th March 1897, I have the honour to state that Surgeon-Major Bannerman returned from Bombay on the 30th March, and to submit an interesting and instructive report on his investigations regarding the bubonic plague.

2. Surgeon-Major Bannerman informs me that Professor Haffkine will be able to supply the serum for inoculation from Bombay, if it is required in this Presidency.

3. I would suggest that a telegram should be sent to the Right Honourable the Secretary of State for India to send out at once twelve of pravaz serum syringes, each of 10 cubic centimetres capacity, with leather pistons and graduated stems. These syringes are best obtained from M. Charriere Collin, Scientific Instrument Maker, Paris.

ENCLOSURE.

From the Inspector of Vaccination and Deputy Sanitary Commissioner for Madras, on Special Plague Duty, Bombay, to the Surgeon-General with the Government of Madras, dated 27th March 1897.

In accordance with G.O., No. 427-28 M., of 8th March 1897, I have the honour to submit herewith my report on the treatment of the bubonic plague both generally and with special reference to the methods of treatment adopted by M. Haffkine and Dr. Yersin.

2. For this purpose it is necessary that a medical officer should be able to recognise at the earliest possible date the occurrence of a case of plague, both for the sake of the patient himself, and for the prevention of the spread of the infection. In cases presenting the classical signs there can be little difficulty in arriving at a correct diagnosis, but when the glandular swellings are absent, as they often are, it may be necessary to keep a patient under observation for some days before a decision can be arrived at.

3. The following signs and symptoms may be regarded as typical:—A rise of temperature on the first day of the disease, of a very pronounced character, 106° or more being common, accompanied by severe shivering and frequently vomiting. In 95 per cent. of the cases the conjunctivæ are found to be injected on the second day of the disease. The tongue may be described as being like wash-leather, or of a rusty brown "typhoid" appearance, with red or even inflamed edges. When spoken to, the person answers in a slow hesitating indistinct manner, the syllables being separated from one another, and the impression conveyed being that the individual is under the influence of alcohol. The gait is also in many cases suggestive, being like that of a drunken man. Some cases, on the other hand, may present violent maniacal symptoms, or the man may answer in an irritable manner as if resenting being questioned. But the typical appearance is the stupid dazed look of one newly awakened from a deep sleep, and there is evident difficulty in realizing new surroundings, and understanding what is going on around. Vomiting or diarrhoea or both, may be present or not. Buboes should of course be carefully looked for in the groins, armpits, sub-maxillary regions, and in fact in all places where glands are known normally to exist, as they are sometimes found in most unexpected spots.

4. The bacteria characteristic of plague are found in the fæces, sputum, blood and lymphatic glands. They are easily detected in fluid withdrawn from the glands both by the microscope and by cultivation in agar tubes. As far as the Bombay epidemic shows, it is often impossible to detect them in the blood, and if they are detected it is generally of evil omen for the patient. The fæces and sputum contain so many bacteria in the normal state that it is a matter of difficulty to separate the plague bacillus from the more robust forms already present, and though they may be detected by the microscope, it is impossible to tell for certain without cultivation, whether the forms seen are really the specific bacillus or not. For ordinary diagnostic purposes, then, it is best to rely on matter withdrawn from the affected glands, and the following is the method recommended by M. Haffkine as the easiest and best. The apparatus required is, a supply of Pasteur's pipettes, microscopic slides, carbol-fuchsin stain, a spirit lamp, turpentine and absolute alcohol. Pasteur's pipettes are prepared as follows, from ordinary glass-tubing. The tubing being heated to redness in the flame of a Bunsen burner is removed from the flame and immediately drawn out, so that a pipette with very fine tapering point is formed. The tapering end is about 6 inches long and in diameter a little stouter than a hypodermic needle. The point is closed by melting in the flame, and the other end of the tube being closed with a plug of cotton wool inserted a quarter of an inch within the orifice; the whole is sterilised by being rotated in the flame until the cotton is stained of a uniform brown colour. The skin over the gland must be carefully disinfected by washing with soap and warm water, and the application of turpentine and alcohol. Then the pipette having been sterilised by passing several times through the flame of the spirit lamp, the sealed point is broken off leaving a sharp edge which easily penetrates the skin. The skin over the gland is now put on the stretch by the finger and thumb of the left hand, while the pipette is given a final heat in the flame, and by means of rotary motion imparted by the thumb and forefinger of the right hand is made to penetrate the skin and tissues till it is felt to enter the gland. The capsule of the gland offers some resistance to the point of the pipette, and when it is pierced the sudden cessation of resistance intimates the fact at once. In most cases the contents of the gland will ascend the capillary tube of the pipette at once, but if not the mouth may be applied to the end and suction employed as the mouth will be effectually protected by the cotton plug. The pipette is now withdrawn, and agar tubes inoculated in the ordinary way, after which smear preparations may be made on the slides, which should be allowed to dry, when they can be stained and examined. The stain may be left to act for two minutes or so.

5. To study the appearance of the bacterium, a one-twelfth immersion lens is required. The characteristic appearance is that of a bacterium rounded at the ends and joined together in pairs, so as to form what M. Haffkine calls a "diplo-bacterium." The division may appear complete or only an indication of it may be seen, and the poles staining more easily than the rest of the organism, a most characteristic appearance is obtained by which it may be easily diagnosed. The appearance of a cultivation in agar, is also very characteristic. Almost no growth is seen for two days, then a peculiar dotted or ground-glass appearance is to be noticed spreading out from the inoculated spot, which once seen is easily recognised. It has been compared to the appearance of the back of a mirror when the growth is viewed from behind, and when looked at from the side with the light reflected from its surface it has a peculiar varnished look, not easily mistaken. Specimens taken from cultures in agar and broth present many and various appearances under the microscope; thus, in the early days of agar culture threads of varying diameter and without divisions may be seen, and in broth cultures, chaplets or chains may be found. In the tissues involution forms are found which it is difficult to recognise, unless a careful study of the transition forms is made.

6. The treatment pursued in Bombay differs little from that laid down by Dr. Cantlie in his paper in the British Medical Journal of 30th January 1897, *i.e.*, stimulants, good nursing and the treatment of symptoms as they arise, special care being taken of the heart, which is so apt to fail suddenly even during convalescence. At the Parel Hospital, Surgeon-Captain Thomson appears to have achieved a considerable amount of success by treating his patients with large doses of perchloride of mercury

with the object of acting on the bacteria in the intestines. He gives two drachms of the liq. hydrarg. perchlor. on admission and a drachm every two hours thereafter for the first 24 hours, and then every three hours till convalescence sets in. His death-rate in cases that survive for 24 hours after admission is 36·27 per cent., and as no salivation is produced, the plan seems worth trying. The glands at this hospital are treated with glycerine and belladonna and hot fomentations when inflamed, with the result that only about 2 per cent. suppurate, which is a great matter as when opened the incisions take a very long time to heal. At the Arthur Road Hospital under the care of Dr. Chowksey, no perchloride is used, but injections of liquor iodi are made into the affected glands, with the result that nearly all the glands suppurate and tedious sores remain open for weeks, retarding convalescence. Dr. Chowksey maintains that the temperature falls after the injection, and that the practice is an endeavour to imitate Nature's mode of cure which he alleges is brought about by suppuration, but this contention is not borne out by the experience of the Parel Hospital noted above. The cases admitted here are probably of a more acute type than those sent to Parel, for the mortality up to the end of February was 54·71 per cent. of the admissions.

7. The plan of treatment adopted by Dr. Yersin is the frequent injection of large quantities of antitoxic serum derived from the blood of horses treated with injections of plague bacilli until they have acquired immunity. He reports that the serum with which he has hitherto operated in Bombay is too weak, and in consequence, not only have very large injections to be made, but the effect produced is not what it ought to be. In most cases the immediate effect of an injection is to lower the temperature a degree or more, but the effect seems soon to pass off unless another dose is given. The following statistics have been obtained from the Parel Hospital through the kindness of Surgeon-Captain Thomson, the medical officer in charge. These comprise most of the cases done by Dr. Yersin in public in Bombay up to date. The cases were chosen by Dr. Yersin himself, and were presumably selected as those most likely to be benefited by the injections; they may therefore be fairly enough compared with the statistics of the whole hospital, when treated in the same way, *i.e.*, by excluding moribund cases dying within 24 hours of admission.

Twenty-two cases in all were injected, but from these we must deduct two cases which turned out not to be plague; this leaves twenty cases for consideration. Of these, two died within 24 hours and may therefore be excluded as noted above. Of the eighteen cases left, nine died and nine recovered, which gives a death-rate of 50 per cent. I therefore think that the method is still too much in the experimental stage to come within the sphere of practical therapeutics. I may mention that a supply of this serum of a more matured kind is now on its way out from Paris, and it will be interesting to watch whether better results follow its use.

8. The methods employed by M. Haffkine are of two kinds, viz., prophylactic and curative. The former agent is prepared by inoculating broth with a pure culture of the plague microbe and allowing it to elaborate its toxin for a period of a month, or until the nutrient material in the broth is exhausted. The broth is then sterilised by being heated to 70 degrees centigrade for the space of one hour, and it is then ready to be decanted into sterilised test tubes for distribution. It will be seen that this preparation differs from the anticholera vaccine, in that it contains no living microbes as the latter does. It is administered in doses varying from one to three cubic centimetres by means of a pravaz syringe inserted into the subcutaneous tissue of the arm or flank. Considerable reaction and discomfort is usually felt for two or three days after, but most people are able to continue their ordinary avocations during the treatment. The statistics collected up to date are decidedly favourable and point to this as a means of protecting a population against the plague, but time alone will show whether this is really so or not. The first opportunity of testing the efficacy of the prophylactic was afforded by an outbreak in the Byculla Jail, which occurred at the end of January last. Between the 23rd and 29th of January nine attacks took place with five deaths. On the forenoon of the 30th, there were six cases with three fatalities; in the afternoon inoculation of 148 of the jail population was effected. That evening three of those inoculated died, two of them having had buboes at the time of injection. The table below shows the subsequent course of the outbreak—

Date of event.		Among 173 not inoculated.	Among 148 inoculated.
30th January 1897	after inoculation	Nil.	3 cases, 3 fatal.
31st "	"	2 cases, 1 fatal	1 case, recovered.
1st February	"	1 case 1 "	Nil.
2nd "	"	1 " 1 "	Nil.
4th "	"	1 " 1 "	Nil.
5th "	"	2 cases, 1 "	Nil.
6th "	"	5 " 1 "	1 case, recovered.
Total after day of inoculation		12 cases, 6 fatal	2 cases all recovered

From the above it would appear that the protective power of the vaccine is established after 12 hours only, an astonishingly short time when compared with the seven days required for vaccination against small-pox.

Various other statistics have now been obtained pointing in the same direction; *e.g.*, in the house of Mr. Allan Turner, three persons were inoculated and 14 were not; amongst these 14, two cases occurred, both ending fatally. Six of those left were then inoculated, none of these were attacked; but one case occurred amongst the uninoculated. Again at Worli cemetery, 21 people were inhabiting one house, nine were inoculated, out of the remainder three have been attacked. A clerk near the same place was inoculated, but did not get his family done; of these (a son and two daughters) one has been attacked. A Mr. Prior living at 36 Marine Lines had his family and servants inoculated, about 14 in all; cases have occurred in all the surrounding houses, but none in No. 36 nor amongst the inoculated living in these neighbouring houses.

The total number inoculated up to the 26th is 4,966, and of these five have been attacked. Three of those were attacked four days after inoculation, and all have recovered. Two were attacked within twelve hours and died, but there is evidence to show that both of these cases had the disease in them at the time.

From the above figures it will, I think, be manifest that the inoculations are in themselves harmless, and I would therefore recommend that if the disease should appear in the Madras Presidency, an endeavour be made to protect the population of the place by this means.

The curative serum used by M. Haffkine is obtained in a similar manner to that employed by Mr. Yersin, but as it has not as yet been used in public, it is impossible to pronounce an opinion as to its merits.

ORDER—No. 887 M., dated 13th April 1897.

Recorded.

2. His Excellency the Governor in Council is much indebted to Surgeon-Major Bannerman for his interesting and instructive report of his deputation to Bombay in connection with the treatment of the bubonic plague.

3. As Dr. Yersin's mode of treatment has not been so successful as for the present to warrant its exclusive adoption, the proposal to establish in Madras horse inoculation for the production of the serum will be dropped for the present.

4. The following telegram will be despatched to the Secretary of State for India:—

"Please send twenty pravaz serum syringes (of) ten cubic centimetres capacity (with) leather pistons (and) graduated stems, obtainable Charriere Collin, Paris."

(True Extract.)

G. S. FORBES,
Secretary to Government.

To the Surgeon-General, with spare copies for distribution to District and Medical Sanitary officers.

"the Sanitary Commissioner.
"all Collectors.
"the President, Municipal Commission, Madras.

Exd. Shaik Karim.

NOTE FOR THE Secretary to Govt, L.M.D.

Orders are requested as to who
thru the cost (Rs 68-4-0) of the tele-
gram referred to in para 4 of G.O.
no 887 in d/13th April 1917 should
not be met from Provincial Funds.

V.R.
5/5/17

G.O. No. 1013 M

29/4/17

Thru the cost of Rs 22-12-0 of
telegram despatched to the Secretary
of State on the same subject should
also be met from Provincial Funds.

Smt
6/5/17

I don't know. I fear Govt.
must pay these general
precautionary charges

B.M.
10/5/17

14/4.

On the whole I think the cost
should be distributed among
Dist. Bd. & Comm. Comrs.

S.R.
7/5/17

To
Finl. Dept.
S.R. 7/5/17

13/5-17

Recd 11.5.17

Papers to be read in proceedings:—

When given
When
W

Again G.O., dated 18th April 1897, No. 887 M.
Again G.O., dated 189 , No.
Current No. of 189 , dated , from
" " " 189 , " " "
" " " 189 , " " "

CS

ORDER.

W. 4118 19th May '97

(Rs 68-4--)

Mr

The cost of the telegrams
contained in form 4 of the above order
as well as all other general
precautionary charges connected
with the plague in this
presidency will for the present
be debited to Provincial
revenue. The Accts. Genl
will be requested to maintain
separate accounts of the
charges incurred at this
I forward a statement to
you at the end of each quarter

manifold

Mr L. M. exp. (v)
Accts. Genl (v) with copy of
SO 887 M
13.4 22

26/5/97

17/5/97

Cust. 17/5/97

22

19/5/97

FROM ORDERS.

C. S.

When given for copying 21/5
When copied 21/5
When examined 22/5 } 189
When signed _____

READ AGAIN G.O., No. _____ DATED _____
189

CURRENT No. _____

ENCLOSURES TO O. No. _____

ORDER OF GOVERNMENT A A A A A A A

LETTER OF GOVERNMENT

STATEMENT WITH DITTO

PAPERS NOT FILED UP, BEING MEANT FOR DESPATCH
IN ORIGINAL.

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