

COMPARISON OF SALVARSAN WITH QUININE.

(I).—Salvarsan does not probably shew any increase in specific action against the asexual forms of malarial parasites on that of quinine. The clinical results following one injection of salvarsan are certainly inferior to those following quinine.

(II).—Three men out of five (60%) had to be sent on sick leave after the injection of salvarsan for their malaria. The usual annual sick leave rate for men treated with quinine in Mandalay is about 1%.

(III).—The cost of one dose of salvarsan would purchase enough quinine to treat seven cases of malaria with a full four months' curative cost.

A dose of salvarsan at the medical store dépôts costs Rs. 7-8, one lb of quinine (7,000 grains) costing Rs. 10. A full course of curative quinine (10 days of 10 grains each with 10 grains four times weekly for four months) comprises 740 grains. The cost of a dose of salvarsan would therefore purchase $(7,000 \times \frac{1}{2} \times \frac{1}{10} =) 5,250$ grains quinine, which would supply sufficient for $(\frac{5,250}{740} =)$ seven full curative quinine courses.

(IV).—There is no comparison between salvarsan and quinine as judged by the relative danger to life of the two treatments, their respective difficulty of administration and disagreeable effects to the patient.

CONCLUSION.

(I).—Salvarsan has some undoubted specific action on the asexual forms of malarial parasites, but has apparently no influence in the prevention of the evolution of the sexual cycle.

(II).—Salvarsan certainly does not shew that immediate and progressive beneficial effect in malarial disease which so often follows its administration in certain cases of syphilis. Indeed, the cases recorded above did not stand the injection at all well.

(III).—In general use salvarsan will never replace quinine, in particular use it might possibly be thought desirable to administer salvarsan in a case of persistent malaria resisting quinine by mouth and syringe. There is no other apparent indication for the employment of salvarsan in malaria.

One further point may be noted. It has been shewn that salvarsan (an organic arsenical compound) has some definite specific influence on the asexual cycle of the malarial parasite. Might there not be in this fact a possible plea for the more extended prescription of oral arsenic as long employed by the Savants of old, combined with quinine in the treatment of present day acute malarial disease.

REPORT AND STATISTICS OF THE CHOLERA EPIDEMIC IN THE AHMEDNAGAR DISTRICT FOR THE YEARS 1912 & 1913.

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CHOLERA began in the District at Akola on the 29th February and was most probably brought from the Nasik District.

The disease gradually spread down to Sangamner which became infected on the 12th of April and Parner on the 19th. Ahmednagar and Kopargaon talukas were infected in May. In June the whole district with the exception of Jamkhed was infected. Jamkhed became infected in July with great virulence. The disease was stamped out in the Kopargaon taluka on the 28th of August, and in the Ahmednagar taluka on the 4th of September. The remaining talukas becoming free in October with the exception of Shrigonda, which became free on the 11th of November, Akola and Sangamner becoming free on the 3rd and 4th of December, respectively.

From my statistics it will be seen that 443 separate towns and villages were infected with a total of 16,173 cases and 7,617 deaths out of a population of 901,336, which gives a case rate of 1.79% and a death-rate of 0.84% amongst the whole population.

During May I wrote out and had copied a circular of instructions for the prevention and treatment of cholera when the missionaries in the district asked for advice. These missionaries did most excellent service for the district as wherever they were, cholera was aborted almost immediately and no grave epidemic ever occurred.

In June I sent a copy to every dispensary in the district and then collaborated with Mr. Macmillan, I.C.S., the Assistant Collector, who drew up the vernacular instructions. This circular was distributed throughout the district to each Mamlatdar and Kulkarni. At the same time phenyle, potassium permanganate and a supply of pot. permanganate pills were sent to each Mamlatdar for distribution.

The failure of the rains and the pilgrimage to the Pandharpur Fair in the second week of July spread the epidemic most widely through the district. Unfortunately the orders of Government stopping the pilgrimage had not arrived in time to prevent a concourse of some 3,000 people passing through Ahmednagar on foot.

The statistics tabularly appended as Table A. I have compiled from information from the Sub-Assistant Surgeons and the Mamlatdars of the various talukas, the latter information I owe to the kindness of the Collector and Assistant Collectors of the District.

The first part of the table gives the results of personal treatment by the Sub-Assistant Surgeons to cases they had under their own charge and can be thoroughly relied on. The treatment was essentially that of Rogers' of Calcutta by the pills of potassium permanganate given according to his instructions.

The results speak for themselves ; they were not selected cases, but every case as it came along was so treated. The number was not very great, but it shows out of 423 cases a death-rate of only 21·98 per cent. against a 60 per cent. death-rate in those cases which refused treatment and were known to the Sub-Assistant Surgeons. This accounts for the small number of cases shown under the heading of cases not treated with potassium permanganate.

The second part of the table is from the information supplied by the Mamlatdars and I have summarised the results. From these it will be noticed that amongst 4,574 cases supposed to have been treated with potassium permanganate the death-rate is 35·57 per cent. against the total of non-treated cases of 11,599 with a death-rate of 51·64 per cent. giving a total of 16 per cent. in favour of the treated cases. This compares at first sight very unfavourably with the 38 per cent. gained by the Sub-Assistant Surgeons. I think, however, it must be taken into account that the numbers shown as "being treated," simply implies that the friends or relatives of the cholera-stricken took the pills, but in how many cases they were given at all or very inadequately or to the practically moribund must be left to the imagination. That in many cases they must have been given is, I think, definitely proved by statistics. Then again every death occurring amongst those who took the pills was bound to be reported but not so the recoveries.

All the chief men and officials of the various talukas are unanimous in their opinion that the pills do good, and I am sure that if this year cholera again breaks out that the population will take willingly to the treatment. What the result will be in this famine-stricken district remains to be seen.

That the number of cases was not infinitely greater is, I am sure, largely due to Mr. Macmillan, I.C.S., who threw himself into the preventive treatment with great zeal. He having seen how by thoroughly treating all the wells of Nimbodi where a virulent outbreak of cholera was raging with over 20 deaths a day I completely stopped the epidemic in three days : he instructed all his Mamlatdars, Patels and Kulkarnis how to treat their wells, and to my knowledge personally treated many wells himself.

This epidemic proved so many times that once get the water supply properly treated with permanganate the disease at once dies down. To

quote only one instance, at Newasa the river was guarded by police and no one allowed to take water. The only supply being from wells previously treated with permanganate. The disease stopped abruptly. The police guards were removed the disease at once reappeared. These rivers are without doubt the great source of the spread of infection, and as long as their beds are used as latrines so long must the infection reappear.

The Ahmednagar city statistics are very interesting showing how in a crowded community simple measures are sufficient to keep the enemy at bay. The first case was reported on the 15th June and the last on the 11th of November. During the whole time only 210 cases with 167 deaths occurred out of a population of 33,878. Most of these cases arose when a little water was flowing in the river. Thus 58 cases with 56 deaths occurred between the 11th of July and the 27th, and 92 cases with 55 deaths between the 12th of October and the 22nd. That is, out of 210 cases 14 occurred after the little rain we had, and the inhabitants took water from the river bed. The municipality through the whole outbreak twice a week permanganated the city supply, and through their foresight the cholera statistics are so good.

The only two cases I could treat both recovered ; one after being practically moribund recovered after infusion with the hypertonic saline solution combined with potash permanganate internally and the other, an early case, by the use of the potassium permanganate pills alone. So, many of the cases were people afflicted outside coming into the city and dying, that a cholera hospital was never opened and cholera was always prevented from getting a grip of the city.

In conclusion, I would state that the infection was not mild but distinctly virulent, and that the good results were entirely due to the goodwill of the people who now thoroughly appreciate the fact that by purifying their water cholera is prevented and if the disease has already gained a hold it quickly stamps it out.

In 1913 six talukas out of ten were affected by cholera but to a very slight extent.

There were 281 cases with 121 deaths as compared with 16,173 cases with 7,617 deaths in 1912.

The statistical table marked B attached gives the details for each taluka.

It shows that the death-rate of people treated with potassium permanganate pills is only 22·89 per cent. as compared with a death-rate of 72·17 per cent. of those untreated, whilst in 1912 out of 405 cases similarly treated by the medical officers the death-rates were 21·98 per cent. and 60 per cent. respectively.

TABLE A.

| NAME OF TOWN. | Total number of cases, | Total number of deaths, | Total number treated with P.P. | | Total number not treated with P.P. | | Percentage of mortality. | | These cases treated and vouch'd for by the medical officer in charge of dispensary. | |
|------------------------------------|------------------------|-------------------------|--------------------------------|---------|------------------------------------|---------|--------------------------|-----------------------|---|------------------------------|
| | | | Cases. | Deaths. | Cases. | Deaths. | Treated with P.P. | Not treated with P.P. | Population of taluka. | Number of villages affected. |
| | | | | | | | | | | |
| Sangamner | 170 | 47 | 136 | 24 | 34 | 23 | 17·64 | 67·64 | ... | ... |
| Mirajgaon | 60 | 21 | 49 | 13 | 11 | 8 | 26·53 | 72·72 | ... | ... |
| Jamkhed | 148 | 39 | 148 | 39 | ... | ... | 26·35 | ... | ... | ... |
| Toka | 27 | 8 | 12 | 1 | 15 | 7 | 8·33 | 53·84 | ... | ... |
| Akola | ... | ... | 78 | 15 | ... | ... | 19·23 | ... | ... | ... |
| Total | 405 | 115 | 423 | 92 | 60 | 38 | 21·98 | 60· | ... | ... |
| NAME OF TALUKA. | | | | | | | | | | |
| Parner | 3,221 | 1,496 | 1,273 | 496 | 1,948 | 990 | 38·96 | 50·08 | 82,342 | 57 |
| Ahmednagar | 2,118 | 926 | 562 | 214 | 1,556 | 712 | 38·07 | 45·75 | 129,109 | 60 |
| Do. Municipality | 210 | 167 | ... | ... | 210 | 167 | ... | 79·52 | 33,878 | 1 |
| Jamkhed | 1,839 | 834 | 163 | 61 | 1,676 | 773 | 37·42 | 46·12 | 78,967 | 37 |
| Shevgaon | 1,744 | 920 | 28 | 9 | 1,716 | 911 | 32·14 | 52·75 | 110,457 | 56 |
| Sangamner | 1,647 | 693 | 1,155 | 384 | 492 | 309 | 33·24 | 62·80 | 97,745 | 59 |
| Shrigonda | 1,152 | 581 | 246 | 92 | 906 | 489 | 37·39 | 53·97 | 65,727 | 36 |
| Newasa | 1,146 | 542 | ... | ... | 1,146 | 542 | ... | 47·21 | 90,565 | 41 |
| Karjat | 1,114 | 543 | 724 | 279 | 399 | 264 | 38·53 | 67·69 | 45,127 | 28 |
| Akola | 962 | 492 | ... | ... | 884 | 477 | ... | 51·14 | 75,949 | 38 |
| Kopargaon | 615 | 318 | ... | ... | 615 | 318 | ... | 51·70 | 91,490 | 25 |
| Total statistics of whole district | 16,173 | 7,517 | 4,574 | 1,627 | 11,599 | 5,990 | 35·57 | 51·64 | 901,336 | 443 |

TABLE B.

| NAME OF DISPENSARY. | Total number of cholera cases investigated. | Number of cases treated with P.P. | Number of deaths of treated cases. | Percentage of deaths of treated cases. | Number of cases untreated with P.P. | Number of deaths of untreated cases. | Percentage of deaths of untreated cases. |
|---------------------|---|-----------------------------------|------------------------------------|--|-------------------------------------|--------------------------------------|--|
| Toka | .... | No Cholera. | .... | .... | .... | .... | .... |
| Jamkhed | ... | Do. | .... | .... | .... | .... | .... |
| Shevgaon | .... | Do. | .... | .... | .... | .... | .... |
| Akola | .. | Do. | .... | .... | .... | .... | .... |
| Parner | 82 | 40 | 8 | 20·00 | 42 | 29 | 69·04 |
| Newasa | 35 | 12 | 2 | 16·66 | 23 | 11 | 47·82 |
| Shrigonda | 28 | 21 | Nil. | Nil. | 7 | 7 | 100·00 |
| Kopargaon | 43 | 26 | 10 | 38·46 | 17 | 14 | 82·35 |
| Sangamner | 37 | 35 | 6 | 17·14 | 2 | 2 | 100·00 |
| Mirajgaon | 56 | 32 | 12 | 37·50 | 24 | 20 | 83·33 |
| Total | 281 | 166 | 38 | 22·89 | 115 | 83 | 72·17 |

A Mirror of Hospital Practice.

A USEFUL SPLINT FOR COMPOUND FRACTURES OF THE LEG.

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THE splint that I am here describing has been of such signal service to me in the treatment of certain compound fractures of the tibia and fibula due to gunshot or shell wounds, that I venture to publish it for the use of other surgeons if they think fit. For simple fractures of

the tibia alone or for compound ones with a small anterior wound and little displacement, the service pattern McIntyre is hard to beat, but in bad compound fractures of both bones with large and septic wounds fore and aft, none of the ordinary splints is of much use when one is aiming at efficient drainage with early immobilization, and when daily dressing is a necessity. I therefore improvised the following arrangement out of any available pieces of wood; it is designed to provide for any necessary extension in view of any overriding of the fragments, to support the leg in a comfortable position, and, above all, to immobilize the broken bones and, at the same time, to admit of free access to the wound without moving the limb. These