A FATAL CASE OF INFECTIOUS JAUNDICE IN THE FEDERATED MALAY STATES.

BY

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AN account, however incomplete, which will tend to render the distribution of some of the rarer diseases more accurate is in itself useful, and this is my reason for publishing these few notes on a case I believe to be infectious jaundice. The identity of infectious jaundice with Weil's disease—originally described by Weil of Heidelberg in 1886—is, I believe, doubtful, the latter being at any rate a much milder complaint. Up to the present time the disease has been supposed to be limited to the Mediterranean basin, cases being reported from Egypt, Syria, Turkey, and Greece. Exactly the same statement was made, not so very long ago, as regards Malta fever, until Bruce's discovery in 1887 made it possible to demonstrate the disease in places as far apart as India, China, the West Indies, Brazil, the United States, and even in England. During eight years' practice in Port Said, Egypt, I can recall four fairly definite cases of infectious jaundice, and now, having been in this country only four months, I believe I have already seen two cases of a similar nature. Of one of these cases I will give an account, it having been rather more fully investigated than the other.

The patient, a schoolmaster, 29 years of age, had lived in the Federated Malay States since 1902. Syphilitic infection had taken place some months (exact period not known) previous to his illness. The course of the case was as follows:

March 28th, 1907. Malaise and slight fever.

March 29th. Fever, rigor, and vomiting two or three times.

March 30th. Fever; 100° F. in the morning, 102° F. in the evening. Pulse, 110. Tongue thickly furred. Bowels acted five times without purgative, the motions being liquid and normal in colour. It was noticed the patient was slightly jaundiced. Thinking the case was probably of a malarial nature, a fresh blood film was taken and carefully examined for evidence thereof. No parasites were found, however, but there was a very marked degree of leucocytosis.

April 1st. Fever; 103° F. in the morning, 102° F. at night. The urine had become very scanty, contained bile pigment, but showed no albumen by boiling or by the cold nitric test. Another medical man, who also examined the urine a few hours after, found a trace of albumen by Spiegler's test, described in Hutchison and Rainey's *Clinical Methods*.

April 2nd. The temperature fell to normal this morning, but regained 102° F. in the afternoon. Pulse 82. The jaundice was much more intense. The liver could be made out to be distinctly enlarged on percussion, but could not be felt on account of rigidity. The urine was very scanty, measuring only a few ounces in the twenty-four hours, deeply bile stained, and was now loaded with albumen. Vomiting occurred several times during the day, and the patient was delirious towards the evening. A dry blood film was taken this afternoon and stained by Leishman's method. Leucocytes were present in enormous numbers, one being able to count ten or twelve under each field of the $\frac{1}{2}$ oil immersion (I regret they were not enumerated). A differential count of the leucocytes showed 90 per cent. polymorphonuclear. The bowels acted twice during the day, the motions being liquid, scanty, and very light in colour.

April 3rd. Fever, morning 101° F., evening 100° F. Pulse at 10 p.m., 80. Urine extremely scanty. Bowels acted once, motion being scybalous and chalky in colour. Jaundice intense, and the patient quite delirious in the evening. In spite of no urine being passed for several hours the bladder was quite empty, and remained so until death.

The treatment which had been adopted up to this time was a daily intramuscular injection of quinine, 10 grains, and a four-hourly effervescent mixture for the vomiting. To endeavour to make the kidneys act, hot stupes were applied to the loins, and 1½ pints of saline solution injected subcutaneously.

April 4th. Temperature, morning 100° F., evening 103° F. Patient unconscious and breathing stertorously all day; complete suppression of urine. After midnight the temperature rose to 105° F. in spite of all efforts to bring it down, sponging, etc.

The patient died at 5 a.m. April 5th.

Necropsy.

A post-mortem examination took place five hours after death. Rigor mortis was well marked. All the internal organs were bile-stained, as might be supposed. There were well-marked petechiae on the pleura and pericardium. Heart normal. Lungs congested at the bases, especially the right. The liver was considerably enlarged, and looked fatty. The spleen was

but little larger than normal, if at all. The kidneys were enormously enlarged; both were about 7 in. long, and the cut section was pale, and looked fatty like the liver. The capsules came away easily without tearing the kidney substance. (The organs were not weighed, through a misunderstanding.)

Part of the liver and kidneys were sent to Dr. H. Fraser, Director of the Institute of Medical Research at Kuala Lumpur, Federated Malay States, who reported that the liver showed suppurative biliary hepatitis, and the kidneys glomerular and parenchymatous nephritis, he expressed it as his opinion that the liver condition was primary.

I think we can quite certainly exclude malaria and relapsing fever from the results of the blood examination. Acute yellow atrophy is negatived by the liver condition, and the only other consideration is yellow fever, and in this, if at all severe, albuminuria is marked on the first or second day, whereas in this case there was not more than the slightest trace on the morning of the fourth.

My colleagues who saw the case with me believed the case to be malaria, anyhow until I made the blood examination, and told me that such cases have been in the past called bilious remittents.

EXPERIMENTS TOWARDS THE PREVENTION OF MALARIA IN THE FEDERATED MALAY STATES.

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WHETHER a community be civilized or not, human nature is much the same; sanitary measures should travel along the lines of least resistance, and I think the more that individuals are required to undergo during an active campaign against a disease the worse for the campaign. This has been my guiding principle in the matter.

In Selangor the population is partly gathered into towns and villages, partly scattered about the country, as permanent settlers. Others, again, find occupation as coolies in opening up new regions, in the construction of roads and railroads, and in the development of agriculture. Obviously no single method can be equally suitable for these different conditions. Yet within the past seven years, and within the district of Klang in the Federated Malay States and among communities so differently situated, malaria has presented itself epidemically in so acute a form as to threaten the existence of the entire population.

ANTIMALARIA MEASURES IN TOWNS.

In 1900 and 1901 the towns of Klang and Port Swettenham were severely attacked by malaria.

Drainage of swamps and clearing and felling of jungle in other breeding places of Anophelines led to the practical abolition of malaria from these two places. Petrolage and cinchonization of the population would have been impossible, while the measures adopted made absolutely no call on any one except the Government and other landowners, who were called upon each to deal with the swamp and jungle within his own land. It appears to me to be the method for towns and villages.

ANTIMALARIA MEASURES OUTSIDE OF TOWNS.

The rapid development of agriculture in this country has led to a large influx of estate coolies, who have suffered severely from malaria. A gang of coolies start in the midst of jungle and swamps to open an estate. They suffer from malaria severely; but obviously, before they can clear and drain a sufficient area to protect themselves from mosquitos, they run a considerable risk of being exterminated by malaria. Some other method has, therefore, to be adopted. The Government has not been slow to assist in measures to control the disease, and at the end of 1904 sanctioned the necessary expenditure on an experiment with mosquito-proof coolie lines on the proposed extension of the Klang water supply. For various reasons the extension was delayed, and at the end of 1906 the Government provided the sum of \$2,000 (£233) as its contribution to such an experiment on a very unhealthy estate near Klang. Owing to the unhealthiness of the place there has been difficulty in