TWO FATAL CASES OF ÆSTIVO-AUTUMNAL MALARIAL FEVER OCCURRING IN ENGLAND.

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THE following cases of malaria present certain features which are probably familiar to those practising in malarial districts, but which, except perhaps at hospitals connected with the larger seaports, must be very rarely encountered in England.

The possibility of a man being infected with the æstivo-autumnal type of malarial fever whilst on his way home across Europe but not developing the disease until some days after reaching England is obvious, but does not, in normal times, come within the experience of most of us. Considering also that this æstivo-autumnal type does not usually give a clear indication of its nature by typical "ague" attacks, it is not surprising that the disease should be at first unrecognised by those unaccustomed to any but the commoner benign forms of malaria.

As it is not unlikely that similar cases to those described below may occur from time to time during the present-day war conditions, and as early diagnosis is all-important, we are recording as fully as possible two cases which have come under our notice.

History of the Cases.

CASE 1.—H., R.N.V.R., was taken ill at his home on Oct. 10th, 1917, with headache, pains all over, and vomiting. He was seen by a medical man on the following day, when the symptoms were those associated with vague febrile attacks of indefinite nature and considered to suggest "influenza." He remained in a somewhat similar condition for the next four days, the temperature varying between 101° and 104° from Oct. 13th to 15th, and his symptoms showing corresponding alterations.

Temperature and Pulse Chart of Case 1.

At no time during this period were the symptoms characteristic of ordinary malaria—e.g., cold and hot stages, &c.—whilst the man denied ever having suffered from this complaint.

As the patient did not improve, the doctor advised his removal to hospital, where he was admitted on Oct. 15th. He was then, apparently, much better; his pains were less, his temperature had fallen to 99°, and he appeared to be recovering from a mild "pyrexia of unknown origin." He remained quite comfortable, with a subnormal temperature until the afternoon of the 16th, when he complained that he did not feel so well. The temperature rose steadily during the night, reaching 103° at 6 A.M. on the 17th. When seen on this morning he looked dull and heavy, with respirations 30 per minute, pulse 112, and a falling temperature.

The question of malaria was raised, but he assured us that he had never suffered from it in his life and had never had a day's illness whilst out of England. The spleen was not palpable, and there was no tenderness in that region. He had been a little shivery, but had exhibited nothing in the nature of "a cold and hot stage" during his attack in hospital.

There was no sore-throat, but some rather curious erythematous patches were noticed on the back. As the day went on he seemed much better, and by the next morning, except for some malaise, he was as well as on admission, the temperature being normal. When, however, on the afternoon of the 18th the temperature began to rise again for the second time since admission, the possibility of malaria became realised. An examination of the blood showed the presence of large numbers of specific parasites, and quinine was given every four hours.

So far the man had presented no alarming symptoms, but during the night he became delirious, tossed about, was sleepless, and did not take nourishment well, while his motions were green and offensive.

The remainder of the history is soon told. The temperature fell to normal again in the afternoon of the 19th and again rose on the 20th; the patient's condition became much worse, vomiting and delirium supervened, and in spite of large doses of quinine at frequent intervals he died in the early morning of the 21st.

An autopsy was made the same day, details of which will be found below, whilst an account of this man's movements previous to the onset of the illness is recorded later in conjunction with those of Case 2.

We now heard from the deceased man's friends that another man who had come home with him on leave was dying, or had died, in the fever hospital, of typhoid after a very short illness. This statement was correct so far as concerned his death, which occurred there on Oct. 20th. The details of his history are as follows:—

CASE 2.—G., R.N.V.R., aged 30, was admitted to the fever hospital on Oct. 18th, 1917, certified as suffering from enteric fever.

The notes state: "The man is evidently very ill. He understands fairly well when spoken to, but his memory fails him. He cannot give much information as to his illness or his movements beyond the fact that he has been in Egypt and has recently arrived in England on 10 days' leave. He states that he has never had any illnesses except dysentery, when in Egypt, and that only lasted three days. For this he did not report sick but remained on duty. He states he was taken suddenly ill with vomiting on his way home."

On admission he was of a pale greyish colour, somewhat cachectic, and his face was rather puffy, body slightly cedematous. Fauces, slight injection and some dry mucus. Glands, nil. Tongue dry and furred. Teeth poor, sordes. Eyes, ears, nose, nil. Temperature 102.8°. Chest, nil. Respiration 28. Rhonchi general, a few râles at bases. Heart normal. Pulse 120, soft, dirotic. Abdomen: Movement good, no reflex, no distension. Spleen much enlarged. Bowels opened three times before admission. Urine, trace of albumin. Skin, no rash. Nervous system, nil.

Oct. 19th: Very restless and delirious all night; given chloralamid, 30 grains. 2 P.M., shivering, no pain, abdomen nil. 5.30 P.M., unconscious and delirious, pulse very small and rapid, passed urine under him. Quinine hydrochlorate 30 gr. given subcutaneously into deltoid. 9.30 P.M.: Unconscious and pulseless, colour very bad.

Oct. 20th: 1 A.M., sinking; died at 10.40 A.M.

The following history of this man before admission to hospital has since been given us by his medical attendant:—

He was first seen on Oct. 12th. He looked very ill. Pulse, 100; temperature, 100.8°; respirations frequent. Pneumonia was suspected, but no physical signs were found in the lungs. Oct. 13th: Condition much the same, slight diarrhoea. He was quite clear mentally and seemed quite bright. He stated that he had got a chill whilst in the train on his way home from Italy and he shivered a good deal. Oct. 14th: Tongue very dry and looked like typhoid. Oct. 16th: Spleen palpable for the first time just below the rib margin. Diarrhoea still present, no distension, no spots. Oct. 17th: Very drowsy. 18th: The symptoms now suggested meningitis, he was curled up in bed and resented the clothes being turned down, pulling them back over him. The spleen had increased in size very much, more than seemed possible in three days. He was transferred the same day to hospital. There was no vomiting. He complained of feeling cold frequently, but there was no definite shivering or rigor whilst he was under observation. No record of the temperature was kept, but it was never found much above 101° when he was seen.

Shortly after the deaths of these two men a rumour reached us that a third fellow-traveller was suffering or had died from a similar complaint. Inquiries were therefore made, and happily proved this rumour to be untrue. This third man was interviewed by one of us on Oct. 24th, when he gave the following information. He himself was, and had been, quite well throughout. He and his two companions, now deceased, left Port Said in good health on Sept. 19th for ten days' home leave. They were landed at a port in Italy (date uncertain, about the end of September), where they

Chart of Case 2.

slept together in tents for two nights. They slept in their clothes without undressing and none of them complained of mosquito bites. The rainy season was then beginning. After getting north of the Alps—that is, about Oct. 2nd—they all three felt very cold and shivery.

Pathological Report.

Examinations of the blood of Case 1 during life revealed the presence of numerous amoebulae within the red cells, whilst multiple infection of the erythrocytes was common. Schizogony was detected and also the presence of ovoid bodies and crescents. The parasite was classed as the *Hæmomenas præcox*.

Films made after death from the blood, the spleen, and the bone-marrow of Case 2 showed numerous amoebulae within, and multiple infection of the erythrocytes, together with a few crescent forms. The infecting parasite appeared to be of the same nature as in the other case.

Post-mortem examinations were carried out in both cases, when, with the exception of considerable swelling (three or four times normal size) and softening of the spleen and slight enlargement of the liver, the only naked-eye changes consisted in pigmentation of the various organs. Thus in both cases the fat was of a browner colour than normal, whilst the grey matter of the brain was of a greyer colour than usual. The liver was dark slate-brown (Case 1) or dark slate, almost black (Case 2) both on the surface and on section. The spleen was greyer (Case 1) or browner (Case 2) than usual.

The pancreas was much pigmented and the marrow in ribs and femur was of a dark brown colour. The pigmentation in the lungs could not be distinguished from early anthracosis.

Histologically the pigmentation of the organs and tissues was found to depend on the melanin present in the very numerous parasites in the blood and on that which had been taken up by the phagocytic cells, especially those lining the blood capillaries, and in the case of the liver Kupffer's cells. Very little pigment was extracellular.

The pigment in the lungs appeared to be mainly of the nature of extraneous inhaled carbon particles.

Besides the pigmentation there was a slight accumulation of small round cells in the portal areas of the liver, but no increase in the fibrous tissue. Since both these cases showed in large numbers the type of parasites (*Hæmomenas præcox*) associated with malignant malaria and the post-mortem appearances were compatible with those found in severe malarial infections the diagnosis of æstivo-autumnal malarial fever was amply verified.

Remarks.

There are two possible causes for the appearance of these cases, the fatal attacks being either primary or else recrudescences of previous infections, called into activity, as so often happens, on reaching a cold climate. Against the latter explanation we must place the positive statement of each man that he had never at any time suffered from malaria, and that, whilst serving abroad, he had never been off duty for sickness; and, moreover, it must be remembered that in each case the parasite present was of the æstivo-autumnal type, so that any previous attack could hardly have passed unnoticed.

If, however, these cases are looked upon as primary attacks consequent upon recent infection the facts are capable of a simple explanation, for these two men left Egypt in excellent health on leave for England. En route they slept two nights in tents in Italy at a place which is noted for malaria, and especially so at that time of year (end of September), whilst no statement was given of any special precautions being taken against infection. The exact date on which they left this place is uncertain, but it was probably about the last day of the month, since they were north of the Alps on Oct. 2nd, and then complained of being cold and shivery. Case 2 dated his illness from that day when he vomited as well as felt chilly. In each case the disease developed fully nine or ten days later. If we assume that infection took place in Italy whilst sleeping in the tents about the last day of September, then the symptoms which occurred in the train on Oct. 2nd were the prodromata, slight in Case 1, more severe in Case 2, whilst the appearance of the full-blown disease about seven days later falls within the usually accepted incubation period of 3 to 12 days.

In each case the disease ended fatally at the end of about ten days from its definite onset.

It is not necessary to emphasise the close resemblance which many cases of æstivo-autumnal malaria fever bear to typhoid fever. All treatises on the disease lay stress on this point. In Case 2 the continued fever, diarrhoea, enlarged spleen, and general symptoms made such a diagnosis at first quite reasonable, although in certain ways it seemed unsatisfactory, and, as is seen from the notes, was eventually doubted and cerebro-spinal fever suspected.

In Case 1 the question of typhoid fever hardly arose, but influenza or some form of mild "pyrexia of unknown origin" was thought possible, until the remittent and recurrent febrile attacks, lasting 24 hours, gave a clue to the nature of the disease two or three days before death.

The following are the points upon which we would lay stress in connexion with these two cases.

In æstivo-autumnal malarial fever the typical cold and hot stages of the simple tertian form may be absent or so slightly marked as to cause the true nature of the disease to be overlooked at its inception, when specific treatment is essential if it is to be of any use. In a malarial district this point is so well known that probably every acute febrile condition is assumed to be of malarial origin until the contrary is proved, but in this country, where, until this war, a large percentage of medical men rarely saw cases of malaria at all, and then only of the milder type, such an assumption would usually be wrong.

Now, however, with the present altered state of affairs, the possibility of the presence of malaria in any man who has been overseas must not be overlooked, and the administration of a large dose of quinine as a precautionary measure pending accurate diagnosis should not be omitted.

In conclusion we would express our thanks to the O.C. 3rd Northern General Hospital for permission to publish this account.

A METHOD FOR THE DRAINAGE OF DEEP WOUNDS OF THE THIGH.

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IT is beyond dispute that deep wounds of the thigh are more liable to be followed by gas gangrene and other grave forms of sepsis than are similar wounds of other portions of the limbs. Small deep wounds of this region are as dangerous as, and probably more dangerous than, widely gaping ones.

The special gravity of thigh wounds probably depends mainly upon the enclosure of the soft parts in an inelastic sleeve of thick fascia lata. Inflammatory swelling confined beneath this fascia is apt to spread under high pressure widely and rapidly amid the intermuscular planes of the thigh. The fascia also prevents the development of early warning symptoms, such as superficial oedema.

The drainage of a deeply infected thigh is a problem which has not yet received the attention due to its importance. Is it or is it not possible to arrest the spread of infection in the intermuscular planes by well-devised incisions? Hitherto the only plan seems to have been the free enlargement of entry and exit, and this empirical plan may fail to attain its object.

FIG. 1.

FIG. 2.

FIG. 1.—Cross-section of thigh at apex of Scarpa's triangle, modified from Heath, showing an intramuscular abscess occupying large space bounded externally by vastus externus (1), in front by rectus (4) and sartorius (5), internally by adductors (6 and 7), and behind by crureus (2) and vastus internus (3). This was the condition present in the case recorded in this paper. 8, 8 are the hamstring muscles.

FIG. 2.—The abscess drained by complete separation of vastus externus from its origin at linea aspera and prolongations of that line upwards and downwards. It will be seen that this incision goes far to provide complete intermuscular drainage for the thigh without injury to any important structure.

Method of Drainage.

A consideration of the anatomy of the thigh, and especially a study of its cross-sections, will show that the largest and most important intermuscular space, and the one most easily opened up, is the space between the vastus externus muscle and the crureus. This space runs the whole