quantities of fluid and semi-solid intestinal contents discharged, and the mere approach of a medical attendant caused screams of apprehension. At the same time the boy was ravenously hungry, as meals were erupted together with succus entericus on to his abdomen within half an hour of ingestion. During the two days following admission a variety of nursing methods applicable to intestinal fistulae were unsuccessfully adopted. Protective pastes would not adhere to the abdominal wall, oiled-silk sheeting failed to maintain watertight connexion with the indrawn mouths of the fistulae, while mechanical suction was subject to obstruction from semi-solid matter and prolapsed intestine and was unable to cope with sudden peristaltic rushes. Local percaïne application did, however, alleviate his pain. Meanwhile a large sacral sore was also causing much distress, and the decision was taken to nurse the patient in the prone position on slings in the hope that the sore would be given an opportunity to heal, and that simultaneously the intestinal contents would discharge downwards from the stomata without further irritation and digestion of the parietes.

Although the success of this measure was immediately evident, the uneven weight distribution with the slings proved uncomfortable to the patient's back. The carpenter then made a special wooden frame. But finally the method described and illustrated was evolved and the boy lay in the prone position day and night almost without interruption for nearly three months.

The improvement of his condition was striking. Six pounds (2.7 kg.) in weight was gained in six days. The abdominal wall began to heal, and it was interesting to note that the intestine prolapsing through hitherto recessed openings formed valves which assisted in slowing the intestinal emptying time, thus aiding nutrition, and occasional rectal motions were achieved. By June 3 his weight was 6 st. 7 lb. (41.28 kg.). Operation, consisting of multiple resection and anastomosis, was possible, and with saline, glucose, plasma, blood, and sulphamezathine preparation this was successfully performed by Sir Gordon Gordon-Taylor. When last seen in February, 1944, the boy was in excellent health and spirits.

Case II

This patient was a man aged 49 on whom laparotomy had been performed with a view to resection of a gastric ulcer. Owing to the size, difficult access, and adhesions it was decided to do a jejunostomy instead, by cutting across the jejunum and making an anastomosis in Y, bringing the cut distal end out through the abdominal wall. Owing to the extreme regurgitation of digestive juices the jejunostomy was not a technical success. The abdominal wall, groins, and back became very raw. The patient was nursed in the prone position, when the condition of the abdominal wall at once improved and it was found possible to maintain the jejunostomy feeding for nearly five months. It was then operated on uneventfully and closed.

Case III

This man, aged 25, had a terminal ileostomy performed in May, 1943, for acute ulcerative colitis with haemorrhage which had failed to respond to medical treatment. The abdominal wall became badly digested from the discharges from the ileostomy. Treatment in the prone position rapidly cleared up the condition of the abdominal wall. The patient died in November, 1943, after operation for intestinal obstruction, but the condition of the abdominal wall had in the meantime been satisfactorily controlled by nursing in the prone position.

Case IV

This patient, a man aged 34, also suffered from ulcerative colitis which had failed to respond to medical treatment. Terminal ileostomy was performed in June, 1945, and again there was much digestion of the abdominal wall by the small-intestine discharges. Treatment in the prone position was successfully adopted, and was carried out with intervals over several months. At the end of this time the ileostomy discharge was semi-solid and much less irritating. Subsequently total colectomy was successfully performed. In this case the prone position did lead to a moderate prolapse of the ileostomy, up to about 6 in. (15 cm.) protruding, but this went back when he was able to resume the supine position.

Some Practical Points

The accompanying illustration shows the arrangement of the bed and mattresses that was found to be the simplest and most efficient. The mattress at the head of the bed is the top third of a divided mattress, and that at the bottom an ordinary mattress folded as illustrated so that the dorsa of the feet are comfortably supported. A flat tray can thus be introduced between the two mattresses to catch the discharges. In addition pillows may be arranged round the division in the mattresses to suit the comfort of the patient. He may lie in this position continuously day and night as the first case did, or may be turned back for intervals of rest. The worse the state of the

abdominal wall the less he feels the inconvenience of the abnormal position in the relief it affords. In a total intestinal fistula the bowels present no problem. In a partial intestinal fistula the patient is turned when he wishes to open his bowels. The prone position with divided mattress lends itself without difficulty to the passage of urine in the male (it so happened

Diagram showing arrangement of bed and mattresses.

that all our patients have been males), and it should not be difficult to make suitable nursing arrangements in the female. Meals can readily be taken prone if the food is first cut up and the pillows are adjusted, the patient supporting himself on one arm and using a spoon with the other hand. Reading can be managed with a book-rest. It is best to turn the head end of the bed to the centre of the ward so that the patient sees the activities of the ward and not merely the wall.

A CASE OF CEREBRAL MALARIA IN GREAT BRITAIN

BY

J. B. RYDER, M.R.C.P.I.

AND

R. T. TOWSON, M.D.

Assistant Medical Officers, South Shields General Hospital

Cerebral malaria as a cause of coma is rare in Great Britain. A search of the literature has revealed only two cases in recent years (Minett and Bernfield, 1937; Sneddon, 1943), in spite of the fact that one would have expected to encounter further cases in Service personnel returning from malarious areas, especially in those repatriated by air. The following case is reported in order to emphasize two important aspects of the condition: first, that it may have to be considered as a cause of coma in this country, and, secondly, because early treatment is so essential.

Case Report

A steward in the Merchant Navy aged 26 was admitted in coma to the South Shields General Hospital at 1.30 p.m. on Sept. 8, 1946. The history, elicited from his wife, was as follows: Four days previously he had arrived in port from West Africa, having been ten days at sea. On reaching home the same day he had complained of headache and of feeling hot and shivery. He had a frequent unproductive cough and vomited after food. During the three succeeding days he had several brief severe shivering attacks and the vomiting persisted. His doctor at first treated him for influenza, but when he suddenly became unconscious, at noon on the fourth day, straightway sent him into hospital with a provisional diagnosis of malaria. A previous history of an attack of malaria three years before, with no subsequent relapses, was also obtained from his wife, and later confirmed by the patient himself.

On examination he was seen to be a man of average physique. He was in a restless, lightly comatose state, but responded to simple shouted orders and reacted to painful stimuli. He was unable to speak and was incontinent of urine. The temperature was 101.2° F. (38.4° C.), pulse 100, and respirations 28. His skin was dry and hot; no abnormality was found in the cardiovascular system and lungs. The abdomen exhibited moderate muscular resistance in the left hypochondrium, but neither liver nor spleen was palpable. Examination of the C.N.S. showed regular and equal pupils with a sluggish reaction to light; no abnormality in the fundi; normal muscle tone, no paralysis; general absence of tendon reflexes, with

a bilateral extensor plantar response; no evidence of meningeal irritation. Urine, N.A.D.

In view of the fact that he had recently been in an endemic centre of malignant tertian malaria the diagnosis of cerebral malaria was entertained. Blood films were examined and revealed a heavy infection with *Plasmodium falciparum*, numerous ring-stage parasites being present. This finding was later confirmed by Dr. Houston of the Pathology Department, Sunderland Royal Infirmary.

Treatment.—Quinine sulphate 10 gr. (0.65 g.) was given orally at 2 p.m., and the patient was able to take sips of water by mouth. Acid quinine hydrochloride 10 gr. in 10 ml. of sterile distilled water was administered half an hour later by slow intravenous injection. Rectal glucose-salines were ordered four-hourly. At 11.30 p.m. the coma was somewhat deeper and the patient was still restless and incontinent of urine. Temperature 99.8° F. (37.7° C.), pulse 108, respirations 24. He was now unable to take anything by mouth. The intravenous quinine was repeated. On the morning of Sept. 9 his condition was unchanged: Temperature 99.8° F., pulse 104, respirations 24. Neck rigidity had now appeared. Lumbar puncture was performed under local analgesia and 10 ml. of clear fluid under slightly increased pressure withdrawn. As the patient was not now retaining fluids per rectum a glucose-saline intravenous drip was started. He was still incontinent and could take no fluids by mouth. On the morning of the 10th his condition was greatly improved; he was conscious and rational, and taking copious fluids by mouth. Temperature 101.4° F. (38.55° C.), pulse 92, respirations 28. His further convalescence was uneventful, and a standard quinine-mepacrine course was instituted. On the 12th a blood film revealed no parasites; his temperature was 97.4° F. (36.3° C.), pulse 72, and respirations 20, and he was discharged home.

Discussion

In arriving at a diagnosis in this case the following points were of importance: (a) A recent visit to a malarious area; (b) history of headache, vomiting, and rigors; (c) sudden descent into coma. The suspicion of cerebral malaria thus aroused, coupled with absence of the clinical picture of any of the more common causes of coma in this country, led to the examination of blood films with resulting confirmation of the diagnosis.

As the clear-cut history in this instance may not be paralleled in other cases of cerebral malaria occurring in Britain, several other conditions must be considered in the differential diagnosis. The most important of these are:

1. *Meningitis* (in particular the hyperacute and fulminating forms).—The frequent occurrence of signs of meningeal irritation in cerebral malaria may confuse the diagnosis, and a lumbar puncture may be essential to differentiate.

2. *Alcoholic Coma*.—It is stated that cerebral malaria often closely simulates alcoholism. This has resulted in fatalities from misdiagnosis, and emphasizes the importance of examining blood films in doubtful cases of coma.

3. *Cerebral Vascular Accident*.—(a) Subarachnoid haemorrhage: In this condition severe headache followed by rapid onset of stupor or coma is characteristic, and meningeal irritation is usually well marked. Lumbar puncture, however, readily establishes the diagnosis. (b) Cerebral haemorrhage, thrombosis, or embolism: The production of embolism by malaria parasites may lead to various peripheral manifestations, among which hemiplegia, monoplegia, and aphasia have been described.

4. *Uraemia*.—The most likely causes of this condition in young adults are malignant hypertension and the alkali treatment of peptic ulcer associated with renal insufficiency. The onset of coma may be rapid, and prodromata equivocal. Examination of the urine, blood urea, and alkali reserve will differentiate the condition from cerebral malaria.

The present case occurred in a man who returned from an endemic area within the accepted incubation period of the disease, and illustrates the importance of considering a diagnosis of cerebral malaria in cases of coma of uncertain origin, particularly in Service personnel returning from overseas. This is especially important, as early diagnosis and adequate treatment are so essential in a disease which carries a 40% mortality in treated cases (Sanford, Crawford, and Warr, 1940). Endemic cases are unlikely to occur, as tropical strains of the malignant tertian parasite fail to survive in the mosquito at temperatures below 75° F. (24° C.) (Shute, 1945).

The dosage of quinine used in this case was somewhat higher than that advocated by Manson-Bahr (1942)—i.e., 5 to 7 gr. (0.32 to 0.45 g.)—but no untoward reactions were encountered. Intramuscular mepacrine is now being used in preference to intravenous quinine in these cases, as the likelihood of toxic

reactions is even less with the former drug, but it was not immediately available for use in this instance.

Summary

A case of cerebral malaria, with recovery, occurring in Great Britain is described.

The differential diagnosis is discussed.

The importance of early diagnosis and prompt adequate treatment is emphasized.

Our thanks are due to Dr. W. Campbell Lyons, M.O.H., South Shields, for permission to publish this case; to Dr. Houston, Pathology Department, Sunderland Royal Infirmary, for his report on the blood films; to Dr. N. Strang, deputy medical superintendent, who allowed us to treat the case in his ward; and to Dr. W. Downing, South Shields, who referred the case to us.

REFERENCES

- Manson-Bahr, P. H. (1942). *British Medical Journal*, **2**, 489.
Minett, J. S., and Bernfield, A. J. (1937). *Ibid.*, **2**, 1120.
Sanford, C. H., Crawford, P. T., and Warr, O. S., jun. (1940). *Ann. intern. Med.*, **14**, 72.
Shute, P. G. (1945). *Publ. Hlth.*, **58**, 62.
Sneddon, J. B. (1943). *British Medical Journal*, **2**, 814.

KALA-AZAR WITH ONSET OF SYMPTOMS IN GREAT BRITAIN

BY

A. FELDMAN, M.B., B.S.

Senior Assistant, Rush Green Hospital, Romford, Essex

In view of the return to Britain of many of our soldiers from the shores of the Mediterranean, where kala-azar is endemic, the following case may be of interest. It serves to illustrate the fact that symptoms of kala-azar may not appear for the first time until the patient reaches this country, when the disease may simulate a primary attack of malaria.

Case History

The patient, a man aged 29, served as a soldier in North Africa and Italy for 3½ years. During that time he had no symptoms of illness. He returned to England and was apparently well for four months. On April 18, 1946, he noticed small lumps in both groins, and the next day an attack of shivering and sweating began. He continued having one of these attacks each day, but in spite of them felt quite well. Apart from slight initial nausea his appetite remained good and there were no other symptoms. On April 27 he was sent into hospital as a case of primary malaria.

On admission his general condition was fair. He had a sallow complexion (this became dusky later in the disease), and his tongue was brown and furred. A soft swelling was palpable in the left hypochondrium, extending for three or four fingerbreadths below the costal margin. It was of an indefinite outline, and was first noted as " ? kidney; ? spleen." The liver edge was not palpable at this stage. The inguinal glands were felt to be slightly enlarged. The heart, lungs, and C.N.S. were normal clinically. Temperature, 101.2° F. (38.4° C.); pulse, 104; respirations, 22. During the first week after admission to hospital the patient had an intermittent high pyrexia reaching 102°–103.8° F. (38.9°–39.9° C.), with daily rigors and sweating. Occasionally there were two spikes of temperature during the 24 hours. He continued to "feel fine." By April 30 the mass in the left hypochondrium had increased in size and was obviously the spleen. The liver edge was also palpable for two fingerbreadths below the right costal margin. Skiagrams of the chest showed some congestion at the right costo-phrenic angle (presumably due to the enlargement of the liver); otherwise the chest was clear. A blood count showed: white cells, 2,140 per c.mm. (polymorphs 68%, lymphocytes 29%, monocytes 2.5%, eosinophils 0.5%); red cells 3,650,000 per c.mm.; Hb, 70%; C.I., 0.95. Repeated blood smears were negative for the malaria parasite. The urine showed no abnormality and the diazo reaction was negative.

As a diagnostic measure, starting on May 1, a course of two days' quinine 10 gr. (0.65 g.) t.d.s., followed by three days' mepacrine 0.1 g. t.d.s., was given, with no effect on the temperature. This was followed by penicillin injections (15,000 units three-hourly for 8 days), which proved equally ineffective. On May 2 agglutination tests on the serum were negative for typhoid, paratyphoid, dysentery, and *Brucella abortus* and *melitensis* organisms. Many dilutions were used with the *Br. abortus* to exclude the possibility of a zone reaction. A blood Wassermann reaction was also negative. On May 14 a formol-gel test was strongly positive. The next day a sternal puncture was performed and a few Leishman-Donovan bodies were found in the smear. An inguinal gland puncture, however, did not reveal any parasites in the stained film.

A course of 21 injections of "anthiomaline" (a 6% lithium antimony thiomalate solution containing 16% of antimony) was given