REPORT ON A CASE OF MELIOIDOSIS FROM SIAM

BY

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The following account of a fatal case of melioidosis which occurred in a Dutch ex-P.O.W. in Siam may be of interest.

Clinical Notes

A Dutch infantryman, a former P.O.W., aged 46, was admitted to a combined Indian general hospital in Bangkok, Siam, on Nov. 6, 1945, with a complaint of weakness and fever.

Previous History.—He had been resident in various P.O.W. camps in Siam for just over three years, and in Nakom Patom, a town in Siam, for the last three months. On Sept. 25 he was admitted to a hospital in Siam with a diagnosis of pneumonia. Next day B.T. malaria parasites were found in the peripheral blood. The patient responded to treatment with sulphapyridine and combined quinine and mepacrine therapy, and by Oct. 10 the temperature was normal. Next day his temperature rose and he complained of fever and pains in the chest, especially on the left side. On Oct. 17 the white cell count was said to have been normal. Treatment with sulphonamides, penicillin, quinine, and mepacrine was tried with no obvious effect; the pyrexia continued, and he was admitted on Nov. 6 to the Indian General Hospital.

On admission he was pale, sallow, and undernourished. The tongue was dry and coated. There was no jaundice or any enlargement of the lymphatic glands. A slight tenderness was present over the caecum. The liver and spleen were not enlarged. The heart was within normal limits, and the sounds were pure and of moderately good tone. A few rhonchi were audible at the bases of both lungs. There was no paresis of the cranial nerves. The tendon reflexes were diminished. The genito-urinary system was normal.

On Nov. 8 the temperature was 102.4° F. (39.1° C.), pulse 116, and respirations 28. The tongue was moist and clean. There was no jaundice. Small palpable lymphatic glands in axillary and inguinal regions were noted. Abdominal examination disclosed no abnormality. The liver and spleen were not enlarged. The chest was clear and the heart was within normal limits, with sounds of poor tone, and rhythm grossly irregular (slow fibrillation). On examination of the nervous system the only points of interest were the inability to elicit knee-jerks and abdominal reflexes. The blood pressure was 105/70. The case was suggestive of "subacute bacterial endocarditis." Penicillin therapy was started, 40,000 units at once and 20,000 units three-hourly. On Nov. 13 the temperature was 103.8° F. (39.9° C.), pulse 120, and rhythm irregular. A few rhonchi were heard at both lung bases. The heart appeared enlarged to the right side. Pericardial friction sounds were not audible. Penicillin was stopped on Nov. 14 and sulphathiazole, 2 g. at once and 1 g. four-hourly, was given.

On Nov. 15 the fluoroscopical report was: "There is enlargement of the heart shadow, more marked on the right side. The apex beat is not very distinct. The left dome of the diaphragm is normal in shape and movements. The right dome of the diaphragm is not clearly visualized. Appearances suggestive of pericardial effusion." A pericardial puncture revealed no fluid. The pulse was now regular. Later the patient became breathless and there was dullness on percussion at the right base with crepitations. The liver was palpable (one finger). Pericardial puncture revealed no fluid. Penicillin, 50,000 units, was injected into the pericardial space. The blood pressure on Nov. 20 was 90/55. Next day the dullness persisted at the base of the right lung. Moist rales were

heard over the middle and lower lobes of the right lung. On Nov. 27 he was given 40,000 units of penicillin three-hourly. Dullness at the base of the right lung, ? Grocco's triangle, was present on Nov. 30. No fluid present. On Dec. 2 the patient was still running a temperature, despite penicillin. The heart was enlarged to the right and left, the spleen was just palpable, and the liver was not enlarged. Screening showed a right inter-lobar collection of fluid. The blood pressure was 90/70. A radiological report of the chest on Dec. 6 was as follows: "There is a homogeneous dense shadow involving almost the whole of the right side of the thorax. The right costo-phrenic angle is completely obliterated. Fluid present." On the 7th the chest was explored, and 10 ml. of straw-coloured fluid was withdrawn for examination in the laboratory. The chest was again explored on the 9th, and 200 ml. of straw-coloured fluid was withdrawn. On Dec. 11 he had diarrhoea, six stools a day; a course of sulphaguanidine was started, but it had no effect on the diarrhoea. A therapeutic emetine course was started on the 14th. The stools contained *Ankylostoma duodenale*. Treatment was not possible because of the patient's poor condition. On Dec. 18 he became breathless; there was marked oedema of the feet and legs, and ? ascites. The urine was clear. "Mersalyl," 2 ml. daily until the oedema subsided, was prescribed. A generalized petechial rash appeared on the 19th, and the left knee-joint was hot and swollen (suggestive of septic arthritis). He was given penicillin, 40,000 units four-hourly, and sulphathiazole, 2 g. at once and 1 g. four-hourly. Nikethamide was to be given if necessary. The urine contained a few white blood cells and granular casts. On Dec. 20 the patient was moribund. The temperature was 97.4° F. (36.3° C.), pulse 140, and respirations 60. The oedema of the feet and legs and ascites had disappeared. The heart was enlarged to the right and left; the sounds were pure but of poor tone; the rhythm was regular. There was dullness over the base of the right lung posteriorly. Vocal resonance and fremitus were diminished. Breath sounds were not well heard. There were a few rales at the base of the left lung. Abdominal examination revealed no free fluid, but the tip of the spleen was palpable though not tender. The liver was not enlarged. The patient died at 4.40 p.m.

Laboratory Investigations

On Nov. 6 the white cells numbered 17,500 per c.mm. (neutrophil polymorphs 75%, eosinophils 2%, large and small lymphocytes 18%, large mononuclears 5%). The sedimentation rate (Westergren) was: 1st hour, 105 mm.; 2nd hour, 126 mm. On Nov. 20 a blood count showed: red cells, 3,060,000; haemoglobin, 50% (Sahli); white cells, 8,000 (neutrophil polymorphs 82%, eosinophils 2%, large and small lymphocytes 16%). On Nov. 27 the white cells numbered 11,200 per c.mm. (neutrophil polymorphs 81%, eosinophils 2%, large and small lymphocytes 14%, large mononuclears 3%). A blood count on Dec. 6 showed: red cells, 3,040,000; haemoglobin, 47% (Sahli); white cells, 11,800 (neutrophil polymorphs 81%, eosinophils 1%, large and small lymphocytes 16%, large mononuclears 2%). Malaria parasites were not found in peripheral blood smears taken on Nov. 9, 10, 13, 14, 24, 30, and Dec. 2. Examination of peripheral blood smears for *Spirochaeta recurrentis* was negative on Nov. 6. Blood cultures for enteric group and other organisms made on Nov. 6, 11, 21, and Dec. 19 were sterile after 14 days. The Widal and Weil-Felix tests revealed nothing of significance, and *Brucella abortus* was not found. Examination of urine on Nov. 6 and 15 showed: albumin, nil; sugar, nil; deposits, nothing abnormal. On Dec. 20 albumin and sugar were not present, but there were a few granular casts per field. Culture of midstream urine was sterile on Nov. 10 and 12. Faeces culture for the enteric group on Nov. 7, 13, and 18 revealed no pathogenic organisms. Examination of faeces for *Entamoeba histolytica* on Nov. 7 was negative. On Dec. 14 ova of *A. duodenale* were found. The sputum was negative for acid-fast bacilli when tested on eight occasions from Dec. 8 to Dec. 15. Examination of the pleural fluid showed: no cells or organisms in direct smear; culture, sterile; and guinea-pig inoculation for tubercle bacilli was negative.

Post-mortem Findings

A necropsy was performed (by C. R. P. and A. Van. de S.) one hour after death with the following results: *Central nervous system*: No macroscopical abnormality seen in skull, meninges,

or surface of brain. Cut sections of cerebral hemispheres, cerebellum, and brain stem disclosed no lesions. *Respiratory system*: Trachea and bronchi contained some fine frothy fluid. Left pleural cavity dry, and contained no adhesions. Right pleural cavity contained about 2 pints (1.14 l.) of straw-coloured fluid. Both lungs were crepitant, and on section revealed no lesions. Hilar glands appeared normal. *Cardio-vascular system*: Both layers of the pericardium were firmly adherent, completely obliterating the pericardial cavity. Heart normal in size. Myocardium pale and flabby. Valves were competent, and exhibited no lesions. Endocardium appeared normal. *Alimentary system*: Oesophagus, stomach, and duodenum presented no unusual features. Numerous abscesses, varying in size, were seen in the wall of the small bowel, at intervals of approximately 6 in. (15 cm.), from almost the commencement of the jejunum to about 3 ft. (90 cm.) from the ileo-caecal junction. No lesions were observed in the colon. The spleen was approximately three times enlarged: a cut section disclosed soft, dark-red pulp. The liver was swollen and pale; cut sections revealed no disturbance of the lobular pattern. The gall-bladder contained about 2 oz. (57 ml.) of clear bile. Nothing abnormal was seen externally and in cut sections of the pancreas. *Urinary system*: Both kidneys were enlarged and contained numerous small abscesses, particularly in the cortices. A number of these abscesses had coalesced to form a honeycomb appearance. The suprarenals appeared normal on external examination and in cut sections. Cultures on blood agar were made from heart blood, from the spleen, and from the abscesses in the bowel and kidneys. The same organism was isolated in each case.

Bacteriological Findings

(By C. R. P. and A. Van de S.)

The organism isolated presented the following features: Gram-negative rods, approximately $1\ \mu$ in length, showing some pleomorphism and bipolarity ("safety-pin" appearance). Actively motile. Aerobic. Grew easily on ordinary media. Growth in broth resulted in pellicle formation, with a ropy deposit in the depth of the medium and a peculiar aromatic odour. The pellicle became rough and wrinkled after four days. On nutrient agar button-like colonies, with flat rims, and central crater-like depressions developed. Growth on 5% glycerin agar was first of the mucoid type, but after three days developed the typical corrugated form of *Pfeifferella whitmori* (*Malleomyces pseudomallei*). Fermented lactose, glucose, mannite, dulcitol, and saccharose, without gas formation. No indole formed from peptone water.

Animal Inoculation.—An adult male guinea-pig, inoculated intraperitoneally with 0.1 ml. of a faintly opalescent saline suspension of the organism, developed the typical "Strauss" reaction after 48 hours and died in four days. A post-mortem examination of the animal revealed: Both testicles were markedly swollen and inflamed. The tunica vaginalis was oedematous and haemorrhagic, and contained in the sac a small quantity of turbid fluid. Numerous miliary nodules were observed in the liver and spleen, in the omentum, and on the peritoneal surface of the bowel. Both lungs were congested. One small nodule was seen in the base of the right lung. The organism was recovered in pure culture from the heart blood and from the lesions in the liver and spleen.

Summary

A case of melioidosis diagnosed after death is described. The main clinical features were: slow fibrillation; pericarditis with effusion; pleural effusion; diarrhoea; septicaemia as evidenced by the petechial rash and septic arthritis; and embolic nephritis.

It is believed that this is the second case of melioidosis to have been reported from Siam.

We are indebted to the Director of Medical Services, A.L.F.S.E.A., for permission to publish this case, and to Dr. J. C. Cruickshank, of the London School of Hygiene and Tropical Medicine, for kindly confirming the organism as *Pfeifferella whitmori*.

Since the completion of this paper one of us (C. R. P.) has seen six other cases of melioidosis—one in Siam (reported on this page) and five in Rangoon. *Pfeifferella whitmori* was isolated post mortem in two cases and in the other four cases during life, from sputum, urine, and pus from an abscess in the neck.

A CASE OF MELIOIDOSIS PRESENTING AS AN ABSCESS IN THE NECK

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The following account of a case of melioidosis is considered worthy of publication.

Case Report

A havildar, aged 25, of the Royal Rajput Regiment, was admitted to an Indian general hospital (combined) in Bangkok, Siam, on Feb. 2, 1946, with a history of a swelling in the midline of the neck, just above the suprasternal notch. It started one month before, and when first observed by the patient the lesion was a small mass approximately $\frac{1}{4}$ in. (8 mm.) in diameter, to which he paid no particular attention. It grew slowly, and appeared to have caused no real discomfort. The swelling now was about $2\frac{1}{2}$ in. (6.3 cm.) in diameter, and fluctuant. It was not particularly tender, and there was no erythema of the skin over it. There were no constitutional symptoms, fever, or glandular enlargements. The general condition of the patient was good. Similar swellings were not observed elsewhere on the body. There were no associated cases in his unit. The patient had been resident in Siam, just outside Bangkok, since August, 1945. The leucocyte count, both total and differential, presented no unusual features.

Progress.—The abscess was incised on Feb. 9, and a small quantity of a peculiar tenacious yellowish-brown pus evacuated. Microscopical examination of this material revealed 10 to 15 pus cells per field, amorphous debris, and scanty Gram-negative rods, about $1\ \mu$ in length, exhibiting some degree of pleomorphism and bipolarity ("safety-pin" appearance). Culture of the pus on blood agar resulted in a pure growth of *Pfeifferella whitmori* (*Malleomyces pseudomallei*), with features, and pathogenicity to guinea-pigs, as described below. Subsequent progress of the patient was slow, healing of the lesion appearing to be considerably delayed in spite of general surgical measures, antiseptic dressings, etc. It was therefore decided to try the effect of an autogenous vaccine from the strain isolated. This was accordingly prepared, at a strength of 500 millions per c.mm., and sterility proved, in liquid and on solid media and by intraperitoneal inoculation of an adult male guinea-pig. The initial dose administered subcutaneously to the patient was 0.1 ml. Subsequent doses were increased by 0.1 ml. every four days, until a maximum of 1 ml. had been reached. No untoward reactions, local or general, were experienced. After the first three or four doses the lesion began to show signs of acceleration in the rate of healing, and within one month the condition had completely subsided and the patient was discharged from hospital as "recovered," much pleased with the end-result. A sample of blood serum obtained before starting the vaccine course showed agglutinins to a titre of 1:80 against a killed suspension prepared from the organism isolated. Unfortunately, owing to our departure from the station and of the patient to his unit, contact was lost. His present condition is therefore not known, but efforts are being made to trace him. It was our intention to have estimated the agglutinin titre of this patient's serum on completion of the vaccine course, but, owing to an oversight and to the rush of work at that time, this unfortunately was not done.

Bacteriological Findings.—The organism exhibited the following features: Gram-negative rods, approximately $1\ \mu$ in length, showing some degree of pleomorphism and bipolarity, the latter being particularly well seen in smears from the original pus, and from the peritoneal exudate of an inoculated guinea-pig. Actively motile. Grew well on all ordinary media. Growth in broth resulted in pellicle formation on the surface, with a ropy deposit in the depth of the medium and a peculiar aromatic odour. After four days the pellicle became