MELIOIDOSIS: A REPORT OF TWO CASES

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MELIOIDOSIS was first described in man by Whitmore and Krishnaswami in 1912 in the autopsies of the beggars and derelicts in Rangoon. Staton and Fletcher observed the disease in the guinea-pig colony at the Institute for Medical Research in Kuala Lumpur in 1913. They erroneously attributed the disease to vegetables contaminated by wild rodents. Many years later Chambon demonstrated the natural occurence of Pseudomonas Pseudeomallei (the causative agent of melioidosis) in soil and water. We now know that it is probably a soil saprophyte. Most cases have been reported from Southeast Asia but sporadic human cases have been reported from Korea, the Philippines, Central and South America, the West Indies and Turkey. Endemic areas are now known to exist in Malaysia, Madagascar, Guam and Australia (Howe *et al.*, 1971).

The precise mode of entry into the body is not known but it presumably gains entrance by ingestion or in association with trauma sustained in endemic areas. A report where one-third of helicopter crew were infected in a series of 150 cases suggest that inhalation of organism in dust raised by helicopter rotors may initiate pulmonary melioidosis.

THE CASES

2 cases of melioidosis with classical high fever, liver involvement without lung involvement are described. The first case seen by the author with lung involvement hepatosplenomegaly and septicaemia died within five days of admission before full investigations and is the reason this author wishes to highlight this disease as early vigorous treatment may save more lives.

Case I

This Malay boy age 22 was admitted with a history of fever, chills and rigors for two weeks prior to admission. He also had pain in both ankles and was treated for typhoid by private practitioners. When he was admitted he had a temperature of 104° F and hepatomegaly. His chest X-ray was normal, haemoglobin was 13gm%, total white count was 9100 with 70% polymorphs, 29% lymphocytes and 1% monocytes. Blood films for malaria parasites were negative. He continued to have a swinging fever and on the 9th day after admission, an area of cellulitis appeared on the left ankle. An X-ray of the ankle was normal. Meantime he had been given chloramphenical 500 mg six-hourly for five days without much effect. Results from blood culture grew pseudomonas pseudomallei and a pseudomonos pseudomallei-like organism. (This pseudomonos pseudomallei-like organism has been sent to Porton Down in England and Centre for Disease Control, Atlanta for identification and results will be reported elsewhere). Meantime, his melioid titre by indirect haemagglutination was 1:3200. Widal Weil Felix was negative. So were the serologic test for murine, scrub, tick typhus and leptospira. The melioid titre after 14 days rose to 1:12,000 confirming the active disease. The live function test before and after treatment is shown in Table I.

Table I

Case I: Liver function tests before and after treatment

	Before treatment	After treatment
Serum protein	6.1 gm %	5.8 gm %
Serum albumin	2.9 gm %	3.1 gm %
Serum globulin	3.2 gm %	2.7 gm %
A : G	0.9	1.1
Zinc sulphate	3 units	5 units
Alkaline phosphate	30.6 K.A. units	16.6 K.A. units
Serum bilirubin	0.7 mg %	0.6 mg %
B.S.P. (retention)	13%	4%

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He was given intravenous pyrrolidino-methyl tetracycline (Reverine Hoechst) 275 mg eight hourly and the temperature settled promptly after 3 days. After one week of intravenous tetracycline, he was started on oral tetracycline and he was discharged one month after admission with 1 gm of tetracycline four times daily.

One month after discharge, he was readmitted with fever, chills, rigors, pain in the throat and dysphagia. He had high fever of 104° F with a whitish exudate on the tonsillar bed. A swab taken grew *Pseudomonas pseudomallei* sensitive to tetracycline and chloramphenicol. Intravenous pyrrolidinomethyl tetracycline was commenced and he recovered and was discharged with 1 gm of oral tetracycline four times daily. At the last follow-up 3 months later, he was completely well. He was given tetracycline almost continuously for two months.

Case II

This 33 year old Indian male rubber tapper was referred with history of abdominal pain, fever and vomiting of about seven days duration. On clinical examination, the patient appeared ill with temperature of 101° F, jaundice and a tender enlarged liver. He was given oral tetracycline (1 gm daily) and meantime his blood culture grew *Pseudomonas pseudomallei.* His temperature and clinical symptoms subsided on the tetracycline and follow-up examination one month later showed that he had recovered completely.

Clinical Manifestations of Melioidosis

The clinical manifestations of melioidosis are protean but fatal cases are not common. The clinical cases are usually either chronic draining abscesses or the fulminating septicaemic variety with a high mortality. Those with superficial abscesses and lung absecesses have been commonly found in diabetics but has been reported in normal people. The pulmonary lesions are characterised by nodular infiltrates in the upper lobes, often accompanied by cavitation that mimics radiological features of mycotic or tuberculous infections. The organisms can be recovered from bronchial aspirate or sputum and if confined to the lungs are readily curable with appropriate antibiotics. Spotnitz *et al.* (1967) reported good results in 9 cases of melioidosis penumonitis using tetracycline. In cases where pulmonary resections were undertaken for suspicion of carcinoma or tuberculosis the organism has been recovered from the abscesses in the resected lung.

Melioidosis sometimes occurs as an overwhelming septicaemia which is fatal even with treatment. These were originally described by Whitmore in derelicts. Abscesses were found in the lung, liver, spleen, kidneys but not in the gastrointestinal tract. Even though malnutrition may be a factor, this author found a young soldier with septicaemic melioidoses who had no underlying immunological disturbance.

Chronic melioid with multiple skin abscesses and draining sinuses sometimes occur in diabetics but can occur in any person exposed to it. This presentation can be febrile and can cause systemic spread if the patient is immunologically compromised. However, many cases are not clinically manisfest as studies by Strauss *et al.* (1969) showed with antibody survey in Malaysia. They found that the antibody range from 3% in non-rice growing states to 20% from those in mainly rice growing states. This correlated with another of their study where the micro-organism was found most often in water from fields of wet-rice cultivation and in water accumulating after heavy rains on the surface of cleared land, such as animal pastures and military camps. Thin *et al.* (1971) reported on the recovery of the organism from open spaces like low-lying sports fields confirming earlier findings (Strauss *et al.*, 1969) that tubber, oil palm estates, primary and secondary forests do not harbour the organism as readily as open fields. All these studies still do not answer the questions that whereas the organism is widespread in Malaysia, why is severe disease not common?

Bacteriology

Pseudomonas pseudomallei are motile, aerobic, gram-negative, non-acidfast and non-spore bearing rods which have bipolar staining. On solid media, it gives off a musty slightly aromatic odour, are not haemolytic and do not produce soluble pigment but are oxidase-positive. On glycerol-nutrient agar *Pseudomonas pseudomallei* grows initially in characteristic round, smooth colonies which after several days incubation take on a wrinkled, heaped-up appearance that became more pronounced on longer incubation. It grows with smooth pellicle in broth but does not grow in desoxycholate nor in a salmonelia-shigella agar. It can grow at 42 C and will reduce nitrate to nitrite and then to nitrogen gas.

Chemotherapy

In their report, Eickhoff *et al.* (1970) tested 10 strains of *Pseudomonas pseudomallei* to 20 chemotherapeutic agents. Tetracycline chloramphenicol, novobiocin and sulphadiazine were the most active whereas kanamycin was less active. Certain combinations like kanamycin-chloramphenicol, tetracycline-kanamycin and sulphadiazine-chloramphenicol showed definite antagonistic effects in vitro. Streptomycin, polymycin B and penicillin and its derivatives were ineffective. In actual clinical practice tetracycline is considered the drug of choice. Adequate dosage maintained over a prolonged period is necessary for bacteriological cure and in various reports relapse have occured after one month of medication as occur in our first case. It is stressed, however, that the sensitivity of the bacterium to various antibiotics be carried out so that adequate and effective chemotherapy be given in this potentially fatal infection.

SUMMARY

Two cases of melioidosis is reported and it is suggested that the bacterium being a saprophyte present in Malaysia should be considered in obscure infections as it is treatable in most cases.

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