

MELIOIDOSIS

Margaret Donovan
CNC Infection Control
Mount Isa Hospital

A number of cases of melioidosis occurred within the Mount Isa Health District in the first half of 1996. Eight of these cases were from one community which had received heavy rainfall. The overall mortality rate was 33%.¹

Patients presenting with melioidosis displayed either an acute pneumonia, or abscesses:

It is recognised that the commonest presentation of melioidosis is pneumonia, with or without septicaemia. The latter is life threatening, although the use of ceftazidime and supportive therapy has reduced mortality rates from 80% to 30-37%.²

Chronic infection can occur and present as skin ulcers, or abscesses in organs including skin, prostate, joint, bone, liver and spleen can. This form of the disease can rapidly progress to the acute septicaemic condition. Although uncommon, a fulminant brainstem encephalitis can also occur.

Melioidosis is a relatively common cause of community acquired pneumonia with septicaemia within the Mount Isa Health District. Globally, the disease occurs mainly in Southeast Asia and Northern Australia, and between latitudes 20 degrees north and 20 degrees south.

Although it is a disease which also occurs in animals (the organism was first isolated in Australia from sheep in the Winton district in 1950³) – it is not a true zoonosis in that animals do not transmit disease to humans.

Melioidosis is caused by *Burkholderia pseudomallei* (previously called *Pseudomonas pseudomallei*), gram-negative bacteria that are natural inhabitants of soil and water. There is a marked association of outbreaks of melioidosis with the wet season, and it is thought the organism naturally lives just under the top soil, rising up to the surface during heavy rains.

Host risk factors for acquiring the disease include living in, or passing through, an endemic area, having close contact with soil (such as outdoor work or gardening), and having conditions that could compromise the immune system such as diabetes mellitus or alcoholism. Occasional cases of melioidosis occur in children.

Transmission is via contact with contaminated soil through breaks in the skin, ingestion or aspiration of contaminated water, or inhalation of soil dust particles. Human to human transmission is extremely rare – only one case has been proven which involved venereal transmission from a patient with chronic prostatitis due to *B pseudomallei* to his wife⁴.

Therefore, standard blood and body substance

precautions are utilised in our hospital when managing these patients, additional precautions are not generally required.

The incubation period of melioidosis is variable; it may be as short as two days. Clinically inapparent latent infections do occur and disease has been reported in one case 28 years after the subject left an endemic melioidosis area⁵.

Definitive diagnosis of melioidosis involves isolation of the organism from blood cultures, sputum or pus. Melioidosis serology is available, but disease can be present when serology is negative, and in endemic areas antibodies to melioidosis have been demonstrated as present in up to 20% of the resident population³.

Treatment of melioidosis is often very difficult as the organism can survive intracellularly and long-term antibiotic treatment is therefore necessary. *B pseudomallei* is always resistant to gentamicin, and IV ceftazidime is utilised with follow-up high dose oral doxycycline or oral co-trimoxazole for at least three months. Non-compliance with oral medications by discharged patients can sometimes be a major problem, and relapses may result.

Prevention of melioidosis is difficult, no immunisation is available. Skin lacerations or abrasions that have been contaminated with soil or water should be immediately cleaned. Footwear, and if gardening the use of gloves, may help reduce the risk of exposure.

Melioidosis is a potentially life-threatening community acquired infection which presents with disparate clinical features. In the Mount Isa Health District it is a relatively common cause of septicaemic pneumonia in some communities, and is associated with the wet season and risk factors including diabetes mellitus and high alcohol intake. A high level of vigilance for the disease is maintained by medical personnel, so that appropriate antibiotic therapy can be rapidly instituted in an effort to reduce mortality rates and relapses.

References

1. Norton R. Melioidosis in North Queensland. Unpublished paper 1996.
2. White NJ, Dance DAB, et al. Halving of mortality of severe melioidosis by ceftazidime. *Lancet* 1989; 2: 697-701.
3. Ashdown LR and Guard RW. The prevalence of human melioidosis in Northern Queensland. *Am J Trop Med Hyg.* 1984; 33(3): 474-484.
4. McCormick JB, Sexton DJ et al. Human-to-human transmission of *Pseudomonas pseudomallei*. *Ann Intern Med.* 1975; 83: 512.
5. Mays E, Rickets E. Melioidosis: Recrudescence associated with bronchogenic carcinoma twenty-six years following initial geographic exposure. *Chest* 1975; 68: 261.