



Melioidosis

Causative agent: *Burkholderia pseudomallei*

Incidence

Melioidosis is endemic in tropical regions, with rice-growing countries being the most severely affected (in particular Vietnam, Thailand, as well as certain parts of India and the Philippines). The *B. pseudomallei* bacterium can be found in the soil and in surface waters predominantly during the rainy season.

Identification

The symptoms of melioidosis are similar to those of glanders. For this reason, the causative agent is called *B. pseudomallei*, in allusion to the glanders bacterium, *B. mallei*. The disease develops in many different forms: from latent, to sub-acute or acute, to chronic. The acute form is characterised by septicaemia (severe bacterial attack) accompanied by a high temperature, multiple aches, vomiting, diarrhoea, abscesses and severe pneumonia. The chronic form is characterised by suppurations in the intestines, liver, lungs, kidneys and lymphatic nodes as well as by a blister-like exanthema (inflammatory rash).

Diagnosis

To diagnose melioidosis, serological assays are mainly used, i.e. tests based on antibody detection. In addition, identification by cultivation techniques is also performed. A reliable diagnosis cannot be obtained from examining samples under the microscope, because no microscopic distinction can be made between *B. mallei* and *B. pseudomallei* bacteria.

Transmission

Infection with *B. pseudomallei* among humans results from direct contact with contaminated environmental sources (e.g. soil and water). However, little is known about the infection process. The assumption is that the infection is spread through skin abrasions (cuts) and direct contact with contaminated soil or water. Rice farmers in endemic regions are at particular risk, as they work barefoot in flooded paddy fields. Clinical literature also documents infection by the inhalation of contaminated dust or by the ingestion of infested water. The disease is rarely transmitted from rodents to humans. There are only two documented cases of human-to-human transmission; in both cases infection was spread by direct contact and not by airborne droplets.

Incubation period

The acute form appears 2 to 3 days after infection. However, many patients only present with symptoms several months, and sometimes years after they were first infected.

Prophylaxis

No vaccine is available.

Treatment

By the time the infection has reached the acute phase, antibiotic treatment becomes redundant; death generally occurs within a few weeks. Without treatment the mortality rate is 90%. The other forms of this disease can be treated with penicillin, doxycycline, imipenem and chloramphenicol.

***Burkholderia pseudomallei* as a biological warfare agent**

It is debatable whether *B. pseudomallei* is suitable for use as a biological warfare agent. The bacterium grows exclusively in the natural environment of endemic regions, and it is unsure whether deliberate aerosol delivery would be effective in other regions of the world. *B. pseudomallei* came to greater attention due to the Vietnam war. Many soldiers, who became infected naturally, later fell ill with melioidosis. In the United States, this disease is known as the "Vietnam time bomb" because it can lie latent in the body, like tuberculosis, and may only become active several decades later.