

Tuberculosis

Definition of causal agent

Mycobacterium Tuberculosis: M.Tuberculosis (human tuberculosis is largely confined to infection to this agent), and less frequently Mycobacterium Bovis, Mycobacterium Ulcerans and other mycobacteria.

1. Transmission of infection

1.1 Exposure

M. tuberculosis spreads from humans through contact with pulmonary secretions or sputum of infected persons. The risk of transmission is dependent on: the condition of the patient who is the source of infection (such as the presence of lung cavitation or bacilli in sputum and inappropriate treatment): environmental factors, with an enhanced risk in small or crowded spaces, and where there is inadequate ventilation: and the health status of the contact, including their previous vaccination or immunosuppression. The risk is higher in healthcare facilities located in communities with a high prevalence of TB infection, and especially where there is a high incidence of multidrug-resistant disease. Animal to human spread is unusual, except for M. Bovis in heavily contaminated milk.

1.2 Occupational Groups at risk

Those at risk are mainly health care workers and laboratory personnel, although farmers and veterinary workers can be exposed to M. bovis.

2. Clinical Disease

2.1 Presenting features

The onset of the disease is slow. The primary lesion is a tubercle. Such a lesion may become inactive and is usually asymptomatic.

Skin sensitivity appears within a few weeks. Pulmonary tuberculosis as a symptomatic disease that affects about 5 to 15% of the infected persons. It has a chronic variable course ranging from asymptomatic to widespread dissemination through the lungs and to the organs (kidney, brain, bones, etc.).

Reactivation of a latent tubercle focus is an important differential diagnosis.

2.2 Clinical pictures

Acute, sub-acute or chronic tuberculosis anywhere in the body but usually in the lungs.

Cutaneous forms of M. tuberculosis infection: Erythema nodosum - allergic manifestation which occurs within a few weeks of primary infection and resolves within a further three weeks.

Cervical lymphadenitis: Mainly *M. bovis*, occasionally *M. tuberculosis*. May be chronic and resistant to treatment.

Chronic tuberculosis: a pulmonary involvement is anticipated. In some cases, kidneys can be involved.

2.3 Laboratory and instrumental diagnosis

Presence of acid fast bacilli in sputum

- Evidence of *M. tuberculosis* in cultures of biological specimens

or

- Suggestive clinical picture or chest X-ray examination suggestive for TB and direct Microscopical identification of *M. tuberculosis*. in sputum or tissue

or

- Suggestive clinical features or chest X-ray examination suggestive for TB and tuberculin skin test positivity.

Other appropriate investigations depending on organs involved

2.4 Prognosis

Recovery is good if tuberculosis is diagnosed early, as treatment with effective drugs is available.

3. General criteria for recognizing tuberculosis

3.1 Determination of causal agent

See section “definition of causal agent”

3.2 Disease caused

Acute, sub-acute or chronic tuberculosis anywhere in the body but usually in the lungs.

Para-clinical criteria

Possibly isolation of the organism on culture

3.3 Definition of specific criteria for identifying the infectious disease from the type of exposure

Type of occupation

Any occupation involving, or likely to involve exposure to infected patients for *M. Tuberculosis* (see Annex I entry nr. 407 **Other infectious diseases caused by work in disease prevention, health care, domiciliary assistance and other comparable activities for which a risk of infection has been proven**) or animals (*M. Bovis*).

Definition of exposure criteria:

Exposure criteria for M. Tuberculosis.

Although the most frequent mode of transmission is airborne, cases of percutaneous transmission in case of cutaneous abrasions have also been reported, this last one above all in health care and laboratory workers.

Exposure criteria for M Bovis

Contact with infected animals or their products

Minimum intensity and duration of exposure: A single particle or a single exposure are in theory sufficient to cause the infectious disease (concept of *close contact*: those health care workers that have attended directly patients affected by TBC, even if in only one occasion and for a short time), however an extended exposure to multiple aerosolization is usually necessary, while a short contact implies a much inferior risk.

Maximum latent period:

M. Tuberculosis incubation period

- From contact to infection: 90 days.
- From infection to active TB disease: the risk is greatest during the first two years after infection.
- However, people who become infected with M.Tuberculosis have approximately a 10 to 15% risk of developing active TB during lifetime. The probability is higher and the disease progression more rapid in HIV infected persons.

M. Bovis incubation period

Acute forms: at least four weeks (usually presenting as enlarged lymph nodes).

Chronic: several years – a wide variety of organs may be involved.

Cutaneous forms of M. tuberculosis infection

Erythema nodosum – allergic manifestation which occurs within a few weeks of primary infection and resolves within a further three weeks.

Cervical lymphadenitis

Mainly M. Bovis, occasionally M. Tuberculosis. May be chronic and resistant to treatment.