

Mycetoma

Report by the Secretariat

1. Mycetoma is a chronic, progressively destructive morbid inflammatory disease of the skin, subcutaneous and connective tissue, muscle and bone. It usually affects the foot but any part of the body may be concerned. Infection is most probably acquired by traumatic inoculation of certain fungi or bacteria into the subcutaneous tissue. Mycetoma was first reported in the modern literature in 1694. Because of the description of a case reported in the mid-19th century in the Indian town of Madura, it is also known as Madura foot. Mycetoma has numerous adverse medical, health and socioeconomic consequences for patients, communities and health authorities.
2. Mycetoma commonly affects young adults, particularly men aged between 20 and 40 years, mostly in developing countries. People of low socioeconomic status and manual workers such as agriculturalists, labourers and herdsmen are the worst affected. Accurate data on incidence, prevalence and distribution are not available.
3. Mycetoma has two distinct etiologies: fungal and bacterial. Infections with fungi such as *Madurella mycetomatis* are responsible for eumycetoma, and those due to bacteria such as *Actinomyadura madurae* cause actinomycetoma. Eumycetoma is more common than actinomycetoma, except in the American continent, where the latter form prevails.
4. The causative organisms can be found worldwide, but most cases of mycetoma are found in tropical and subtropical areas in the so-called “mycetoma belt”, which stretches between the latitudes of 15° south and 30° north, and includes countries such as Brazil, Chad, Ethiopia, India, Mauritania, Mexico, Senegal, Somalia, Sudan, the Venezuela (Bolivarian Republic of) and Yemen. The most affected geographical areas are those characterized by short rainy seasons and prolonged dry seasons.
5. Transmission occurs when the causative organism enters the body through minor trauma or a penetrating injury, commonly thorn pricks. There is a clear relationship between mycetoma and individuals who walk barefoot and are manual workers. In endemic areas, the disease is common among barefoot populations who live in rural areas but no person is exempted. No animal reservoir has been shown to be involved in transmission.
6. The clinical presentation of mycetoma is almost identical irrespective of the causal organism, and is characterized by a triad of painless subcutaneous mass, multiple sinuses (small cavities or fistulae opening onto the overlying skin) and discharge containing visible grains (granules representing colonies of infective agents). Mycetoma usually spreads contiguously to involve the skin, deep structures and bone resulting in destruction, deformity and loss of function, which may be fatal. Mycetoma commonly involves the extremities, back and gluteal region.

7. The incubation period for the disease is widely variable. Given its slow progression, painless nature, massive lack of health education and scarcity of medical and health facilities in areas where it is endemic, many patients present late with advanced infection, when amputation may be the only available treatment. Secondary bacterial infection is common, and lesions may cause increased pain and disability and fatal septicaemia (severe infection involving the entire human system) if untreated. Infection is not directly transmitted from person to person.

8. The causative organisms can be detected by examining surgical tissue biopsies as well as the discharge. Although visual examination and microscopy are helpful in detecting the characteristic grains and orienting the diagnosis, it is important to culture them to identify the causative organism properly. There are other useful techniques for the diagnosis of mycetoma such as DNA sequencing. Imaging techniques can help to determine the extent of the lesion. None of these tests is commonly available in areas where the disease is endemic.

9. Treatment options depend on the causative organisms. For bacterial mycetoma (actinomycetoma) treatment relies on long-term treatment with a combination of antibiotics, tailored to the type of bacteria involved. For the fungal type (eumycetoma), treatment is based on administration of antifungal agents for prolonged periods, usually preceded or followed by surgical excision of the lesions. In all cases, treatment is unsatisfactory, has many side effects, is expensive and is not readily available in endemic areas. Recurrence rates are high.

10. Mycetoma is not a notifiable disease and no surveillance systems exist. Its painless nature contributes to late diagnosis and treatment. No country yet has any prevention or control programme for mycetoma. Preventing infection is difficult, but people living in or travelling to endemic areas should be advised not to walk barefoot, as wearing shoes and clothing can protect against puncture wounds.

11. Development of a cost-effective public health strategy for the control of mycetoma will require significant investment in research and development for prevention, diagnosis, treatment and case management. Mobilizing necessary resources will be challenging.

12. In view of this, the Secretariat has added mycetoma to the list of neglected conditions in order to increase awareness and to advocate for improved surveillance and control. The Secretariat also provides technical assistance to the Mycetoma Research Centre in Sudan in order to advance knowledge on the epidemiology, prevention and treatment of mycetoma.

ACTION BY THE EXECUTIVE BOARD

13. The Board is invited to note the report.

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