

Actinomycetoma caused by *Gordonia westfalica*: first reported case of human infection

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Abstract

Bacteria of the genus *Gordonia* are rarely involved in human infections. We report here the case of a 30-year-old man from Guinea Bissau with mycetoma of the foot. 16S DNA sequencing after surgical biopsy identified *Gordonia westfalica*. To our knowledge, this is the first report of human infection caused by *G. westfalica*.

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Mycetoma is a neglected disease caused by bacterial (actinomycetoma) or fungal (eumycetoma) microorganisms. Walking barefoot provides the usual route of entry for causative pathogens [1]. New microbiologic techniques have recently improved the diagnosis and have led to the discovery of new agents [2,3].

The infection mostly affects male subjects in arid tropical areas with a short rainy season [1]. West Africa and Southeast Asia are endemic for eumycetoma, with most cases caused by *Madurella mycetomatis* [1]. In Latin America, most cases have been reported in Mexico and Brazil, usually actinomycetoma induced by *Nocardia braziliensis* or *Actinomadura madurae* [1,4]. In French Guiana, only a few cases have been reported [5], probably as a result of this country's its wet equatorial climate [1].

We report here a case of imported mycetoma diagnosed in French Guiana caused by the recently discovered microorganism *Gordonia westfalica*.

A 30-year-old man with no medical history except a mild psoriasis sought care for a cutaneous nodule of the left foot. The patient was born in Guinea Bissau and had recently arrived in French Guiana. During his trip he stayed 6 months in Dakar, Senegal, then travelled along the north-east coast of Brazil for 6 months before arriving in Cayenne. Clinical examination revealed a 6 cm wide suppurative and nodular swelling of the first interdigital space, with several discharging sinuses (Fig. 1(a)). Given the suspicion of mycetoma, the entire lesion was surgically removed. Perioperative examination showed yellow grains (Fig. 1(b)). Histology found a polymorphic, neutrophilic infiltrate and inflammatory nodules structured around mycetoma granules (Fig. 1(c) and (d)). Mycologic culture and direct examination were negative. Actinomycetes were visible on bacteriologic culture. Final identification was *G. westfalica*, assessed by a 611 nt fragment of the 16S ribosomal RNA gene [6] and analysis with BLAST (<https://blast.ncbi.nlm.nih.gov/Blast.cgi>) (GenBank accession no. MN900722; 99.2% similarity with reference NR_025468). The patient received 4 weeks of oral cotrimoxazole (800/160/d) and rifampicin (900 mg/d). Complete response was observed, and antibiotic treatment was stopped. There was no relapse at 3 months.

Gordonia spp. are members of the *Actinomycetes* family and are widely spread in the environment, especially in soil [7]. *Gordonia* are mostly involved in respiratory tract infections in patients with immunosuppressive disease, but clinical manifestations also include catheter-associated bacteraemia, arthritis, endocarditis, and central nervous system and soft tissue infections [7]. Only two cases of mycetoma caused by *Gordonia terrae* have been reported so far in the literature [8,9]. The importance of *Gordonia* bacteria in mycetoma is probably underestimated as a result of its difficult isolation using conventional microbiologic techniques. Our case is the third report of mycetoma caused by a *Gordonia* bacteria, and the first caused by *G. westfalica*. This bacteria was first described in Germany in 2002 as a rubber-degrading actinomycete isolated in foul water inside an old automobile tyre [10]. Since then it has never been reported as an animal or human pathogen.



FIG. 1. Cutaneous mass with (a) discharging sinuses and (b) perioperative findings with macroscopic yellow grains (haematoxylin and eosin, original magnification $\times 5$). (c) Inflammatory nodules structured around grains (original magnification $\times 20$). (d) Neutrophilic infiltrate surrounding bacteria.

This case is remarkable because the patient was diagnosed in a nonendemic area, though he was probably infected in Africa. This example underlines the usefulness of sequencing to improve the identification of pathogens in neglected tropical dermatoses.

Conflict of Interest

None declared.

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