

# **Actinomycetes & Nocardia**

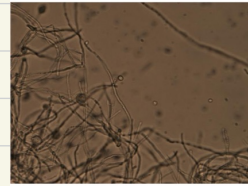
- **A brief summary**



# Actinomyces

Done by :  
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1. it is considered as an opportunistic pathogen .
2. cause actinomycoses .
3. During culturing it looks like a fungi.
4. They grow slowly in culture and they might produce chronic infection and slowly developing infections .
5. They colonize in upper respiratory tract, GI tract and female genital tract. No normally present in skin surface. → inside the body itself.
6. Cause an endogenous infection - No (human to human transmission).
7. Actinomyces organisms are facultatively anaerobic or strictly anaerobic gram-positive rods. → need a specific environment, factors for optimal growth
8. Actinomyces are fastidious and grow slowly under anaerobic conditions; it can take 2 weeks or more for the organisms to be isolated
9. Actinomyces are part of the normal bacterial population on mucosal surfaces).
10. Most actinomycetes infections are cervicofacial (following invasive dental procedure or oral trauma).



Fungal colonies and hyphae

11. Treatment for actinomycosis involves the combination of drainage of a localized abscess or surgical debridement of the involved tissues , and prolonged administration of antibiotics.

→ It needs both drainage for the abscess

→ and taking antibiotics → to prevent the spread of this infection

∴ قمان ليدلى  
⇒ It looks like a fungi in culturing.



FIGURE 31.4 Patient suffering from cervicofacial actinomycosis. Note the draining sinus tract (arrow).

# NOCARDIA

→ cause an infection in immunocompromised patient (Not healthy-normal-people)

1. opportunistic pathogen.
2. They grow slowly in culture, and they tend to produce chronic, slowly developing infections.
3. Have filamentous shape similar to fungi.
4. strict aerobic rods
5. weakly acid-fast (Most important)
6. infections are exogenous → (Not a normal flora)
7. Secretion of catalase and superoxide dismutase that counter hydrogen peroxide and superoxide released by phagocytic cells, preventing fusion of the phagosome-lysosome (mediated by cord factor) and preventing acidification of the phagosome.
8. Bronchopulmonary disease develops after the initial colonization of the upper respiratory tract by inhalation and then aspiration of oral secretions into the lower airways, occurs almost always in immunocompromised patients.
9. Primary cutaneous nocardiosis develops after traumatic introduction of organisms into subcutaneous tissues, can present in the form of Mycetoma is characterized by a triad of painless subcutaneous mass, multiple sinuses and discharge containing grains.
10. As many as one third of all patients with Nocardia infections have dissemination to the brain, most commonly involving the formation of single or multiple brain abscesses.

↓  
inflammation  
and  
pus  
accumulation

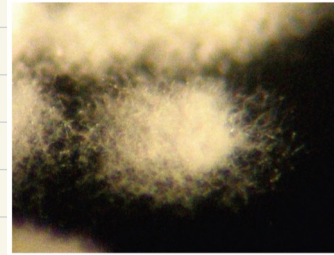


FIGURE 22-12 Aerial hyphae of Nocardia.

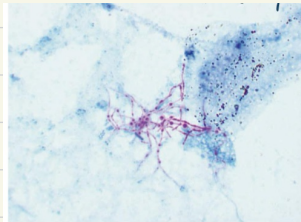


FIGURE 22-10 Acid-fast stain of Nocardia species in expectorated sputum. In contrast with the mycobacteria, members of the genus Nocardia do not uniformly retain the stain ("partially acid-fast").

