Actinomyces Israelii

Actinomyces israelii is a species of bacteria of the Actinomyces genus, which are slow-growing, gram-positive bacilli known for its branching at acute angles and filamentous growth. It is found along the entire digestive tract, from the oral cavity to the bowel as normal flora. Actinomyces israelii infections are associated with dental work or oral trauma that allows inoculation of the oral bacteria below the epithelium, which contains a lower oxygen content and is more favorable to the bacteria's preferred method of anaerobic growth. If untreated, this can result in a facial abscess. This bacterium is known to cause draining sinus tracts from the nidus of infection, which contain characteristic yellow clumps of bacterial colonies that resemble sulfur granules. Actinomyces israelii is also associated with genitourinary infections, especially in patients with IUDs in place. It is responsive to high-dose penicillin.



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Characteristics

Gram-Positive
Graham-cracker Positive-angel
This bacteria stains gram-positive, which indicates a thick peptidoglycan cell wall to uptake the Gram stain.

Bacillus
Rod
Actinomyces are described as a bacillus, or rod-shaped organisms.

Anaerobe
Ant-robe
Actinomyces are anaerobic bacteria, meaning that it does not require oxygen for growth.

Branching
Branches
This bacteria is known for its branching, filamentous growth which distinguishes it from other gram-positive bacteria. This branching can be mistaken to be a branching fungal hyphae.

Oral Flora
Oral Flowers
This bacteria is normal flora in the oral cavity, as well as the entire length of the digestive tract.

Dental Work
Drilling teeth
This bacteria is commonly associated with infection during dental work, due to trauma to the oral cavity. This allows penetration of the bacteria beyond the epithelium.

Oral Trauma
Drilling teeth
Any type of oral trauma, which is common in dental work or physical altercations, can result in the inoculation of the bacteria beyond the epithelium.

Associated with IUDs
IUD
Infections that occur in the pelvic region are commonly associated with IUDs.

Signs and Symptoms

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GU Infections

Uterus

This bacteria is associated with infections that spread to the genitourinary tract.

Draining Sinus Tract

Long Tracts

This bacteria can cause draining sinus tracts of pus from the source of infection.

Facial Abscess

Abscess-guy in face

Actinomyces infections, if untreated, can cause facial abscesses due to its slow-growing and indolent course.

Yellow Sulfur Granules

Yellow Granules

This bacteria tends to clump into yellow colonies that resemble sulfur granules. This can be found in the pus or draining sinus tracts.

Treatment

Penicillin

Pencil-villain

This bacteria is responsive to high-dose oral penicillin over a long course of treatment.

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