

中文題目：黏性放射線菌感染、菌血症與其臨床表徵

英文題目：Characteristic of *Actinomyces viscosus* infection and bacteremia

作者：蕭亦均<sup>1</sup> 劉伯瑜<sup>2</sup>

服務單位：<sup>1</sup> 台中榮民總醫院內科部 <sup>2</sup> 台中榮民總醫院感染科

**Background:** Actinomyces species are Gram-positive, filamentous rods shaped, mostly facultative anaerobic organisms. Actinomyces cause actinomycosis, a chronic, granulomatous infectious disease, which may mimic malignancy. Under recognition of actinomycosis may result in inappropriate antibiotic or intervention. Recent studies also found different antibiotic susceptibility between Actinomyces species (eg: A.meyeri was found resistant to vancomycin) Actinomyces viscosus, unlike most other Actinomyces species, which were catalase-negative, this species is catalase-positive. Actinomyces viscosus forming normal flora of skin and oral cavity, which rarely been reported to cause disease. Therefore, little did we know about the disease presentation if Actinomyces viscosus became pathogenic.

We report a case of Actinomyces viscosus infection with cutaneous actinomycosis and bacteremia, collecting the clinical presentation, risk factors, microbiological evidence and outcome. We also review English-language literature about Actinomyces viscosus infections.

**Method:**

A 66-year-old male with hypertension and bipolar disease under lithium, fludiazepam, seroquel, came to our emergency department due to fever up to 38.9°C without chills for a day. Also, an erythematous painful swelling over the right lower leg was told, which developed gradually in a week. On physical examination, Erythematous change around 10x20 cm over the anterior tibial region with tenderness was found, there were no excoriated skin lesions around. Laboratory tests showed notable leukocytosis with neutrophil predominant. C-reactive protein was 17.9 mg/dL while procalcitonin was 14.5 ng/mL. Two sets of blood cultures were obtained and yielded Actinomyces sp. Clindamycin 600 mg Q8H was administered for Actinomyces bacteremia and cellulitis. The erythematous swelling of the right lower leg improved gradually. Poor oral hygiene was found with plaque deposition and easy bleeding on probing during dental examination. 16s rDNA sequencing identified the isolate as Actinomyces viscosus.

In a review of the English-language literature on Actinomyces viscosus. We searched the Pubmed database with the term “Actinomyces viscosus” OR “A. viscosus” from January 1977 to July 2020, and limited it to human case reports with available full text. We also review Actinomycosis with bacteremia with the term “Actinomycosis” OR “Actinomyces” AND “bacteremia”.

**Result:**

After literature review, there were 15 available case reports, including 20 patients suffering from *Actinomyces viscosus* infection. The age of the patient widely differed from a preterm infant to an 81-year-old male. The clinical presentation was widely varied. Fever was the most mentioned symptom of which eleven patients ever experienced. But seven patients present as a nodule, mass, or abscess which causes local tenderness.

Soft tissue infection and pulmonary actinomycosis is the most common infection site of *Actinomyces viscosus*, which was found in seven and six patients respectively. Two patients were found to have endocarditis with bacteremia. Only a single case report presents endophthalmitis, CNS infection with subdural empyema and esophageal actinomycosis respectively. There was only one disseminated actinomycosis found in the literature review, which presents with lung and brain mass lesion, as well as neck abscess. In this case, *Actinomyces viscosus* was cultivated from neck abscess drainage, however, no *Actinomyces viscosus* bacteremia was mentioned in this disseminated actinomycosis patient.

We also evaluate possible risk factors for these patients with *Actinomyces viscosus* infection. The most mentioned risk factor was patients with poor oral hygiene. There were seven patients with an oral-dental condition, including oral ulcer, denture and caries. Six patients had relative immunocompromised status (multiple myeloma, alcoholism, pancreatic cancer, acute lymphoblastic leukemia under chemotherapy and psoriatic arthritis under methotrexate, respectively). Two patients had received invasive procedures before actinomycosis (Cataract lens replacement surgery and dental cleaning). Overall, Thirteen patients found at least one risk factor mentioned above.

Among twenty patients with *Actinomyces viscosus* infection, only five patients suffered from *Actinomyces viscosus* bacteremia. Two of them were diagnosed with endocarditis, while another two cases disclose *Actinomyces viscosus* pneumonia and neonatal sepsis. Only one case suffered from soft tissue infection found *Actinomyces viscosus* bacteremia.

Contrary to *Actinomyces viscosus* bacteremia, the infectious source of *Actinomyces* bacteremia which reported in this decade were mostly genital urinary tract infections.

**Discussion:**

Although many patients infected by *Actinomyces viscosus* can find the culprit in our review. All of the five *Actinomyces viscosus* bacteremia can contribute to certain risk factors. One endocarditis case found caries while the other endocarditis patient had just received the procedure of dental cleaning. The cutaneous actinomycosis patient also reported poor dental

condition. The patient with multiple myeloma suffered from pneumonia and *Actinomyces viscosus* bacteremia, as well as the neonatal sepsis patient were both immunocompromised. In our review, poor oral hygiene and Immunocompromised status may contribute more influence to *Actinomyces viscosus* infection or bacteremia. Rather than other risk factors, such as implanted devices, especially intrauterine devices, which were traditionally considered risk factors of actinomycosis

The report of actinomycosis increased in this decade. More *Actinomyces* were isolated but it can be contaminated as normal flora. The combination evaluation about patient condition, microbiological evidence and the risk factors become important to make proper decisions.

### **Conclusion:**

*Actinomyces viscosus* infections were rare. We collate the different presentation and risk factors of *Actinomyces viscosus* infection with other *Actinomyces*. It is important to evaluate risk factors and differentiate *Actinomyces* into species if the patient cultivates *Actinomyces*.