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# Actinomyces Israelii – A Rare Cause of Bacterial Peritonitis

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## BACKGROUND

Actinomyces is a filamentous, gram-positive, facultative anaerobic bacterium. This species is part of the commensal flora of the oral cavity, gastrointestinal tract and the female genital tract. Actinomyces have low virulence potential causing opportunistic infection associated with injury to the mucosal barrier, such as that occurring from surgery, trauma, peritoneal dialysis catheter, viscus perforation or intrauterine devices.

Infections associated with Actinomyces are often reported by imaging studies as masses, pseudo-tumors or abscesses. Fistulas and sinus tract formation are not uncommon.

We report a case of Actinomyces peritonitis without preceding abscess or mass in an elderly gentleman with a history of pancreatic cancer.

## CASE REPORT

An 88 year-old man with pancreatic adenocarcinoma, status post biliary stent placement, presents to the emergency department with 2 weeks of worsening abdominal pain and distention, anorexia, malaise and confusion.

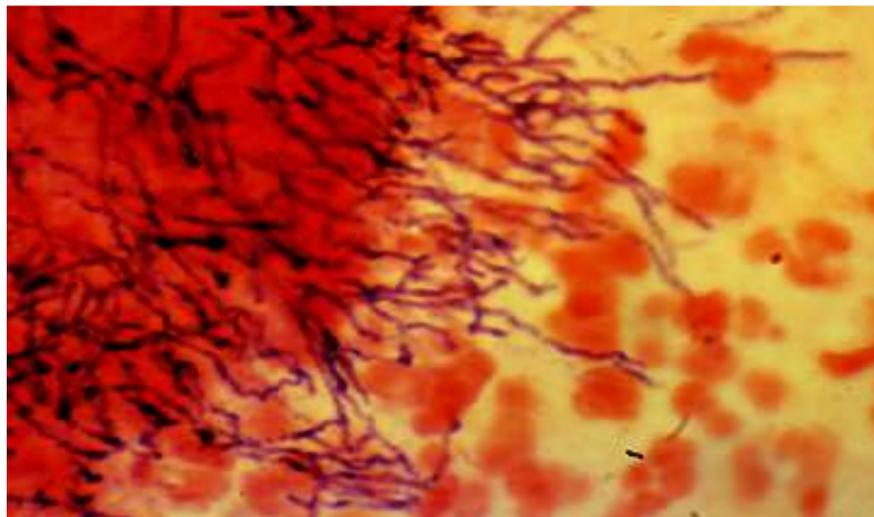
In the ER, the patient was afebrile, tachycardic and hypotensive. He had diffuse abdominal tenderness with positive Murphy sign. Initial labs revealed elevated WBC, elevated Liver Function Tests and lactic acidosis.

Empiric Ceftriaxone and Metronidazole were initiated due to suspected hepatobiliary source of sepsis.

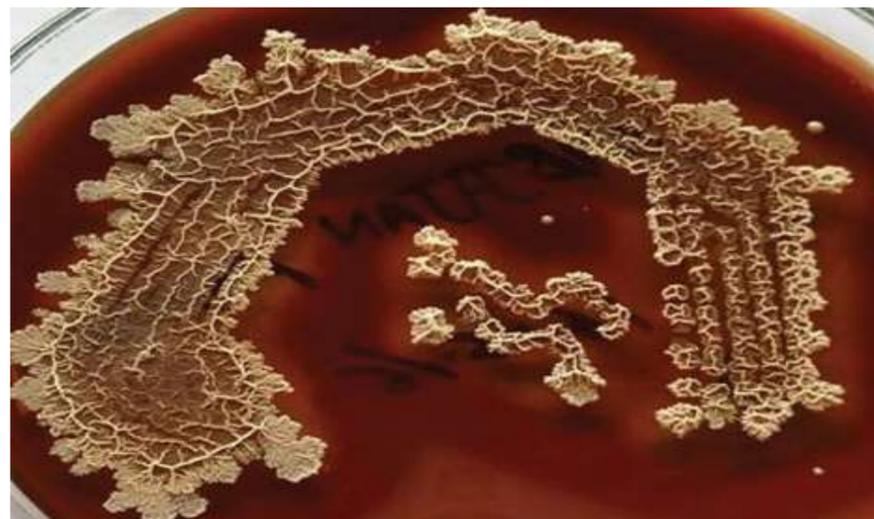
Subsequently, abdominal imaging showed a cirrhotic liver, cholecystitis and increasing ascites with peritoneal enhancement.

A cholecystostomy drain was placed, and bile culture grew Klebsiella and streptococcal species. A paracentesis was done and fluid analysis revealed 43,000/mL WBC (>95% neutrophils). Five days later, the culture grew *Actinomyces israelii*.

The antibiotics were changed to Ampicillin-Sulbactam, the patient was discharged in stable condition with outpatient follow up to determine duration of therapy.



**Figure 1:** Gram stain of aspirate from oral abscess (x1000). *Actinomyces* grows in aggregates, termed "sulfur granules." Image from *uptodate* 2019



**Figure 2:** colony morphology on anaerobic culture. Image from *Braz J Infect Dis vol.21 no.5 Salvador Sept./Oct. 2017*



**Figure 3:** CT of actinomycosis showing an ill-defined, heterogeneous mass in the right lower quadrant. Image from *uptodate* 2019

## DISCUSSION

The presence of *Actinomyces israelii* in the peritoneal fluid culture in our patient was an unexpected finding. This patient's acute peritonitis was most likely secondary to acute cholecystitis.

Actinomyces usually causes a localized form of infection, and acute peritonitis without preceding mass or abscess is rare. Furthermore, Actinomyces are fastidious organisms and may be missed on routine culture. It is usually present with companion organisms. Therefore, Actinomyces should be considered in the differential diagnosis of cases of peritonitis not responding to empiric antibiotic therapy or relapsing peritonitis after a short course of therapy.

Penicillin is the treatment of choice for Actinomyces and duration of therapy varies based on type and extent of infection associated with this organism.

## CONCLUSION

✓ **Actinomyces is a rare cause of acute peritonitis.**

✓ **Actinomyces should be considered in differential diagnosis of culture negative peritonitis, relapsing peritonitis and peritonitis not responding to antimicrobial therapy.**

✓ **Penicillin is the drug of choice for Actinomyces**

## REFERENCES

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