



## Case Report

### Secondary peritonitis by *Actinomyces odontolyticus*



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#### ARTICLE INFO

##### Article history:

Received 13 January 2017

Accepted 8 March 2017

Available online 3 April 2017

##### Keywords:

Abdominal actinomycosis

*Actinomyces odontolyticus*

Secondary peritonitis

#### ABSTRACT

Abdominal actinomycosis is a rare infection and the non-recognition of this particular microorganism may lead to a prolonged septic process and recurrent disease. We hereby present a case report of 53 years-old woman with a secondary peritonitis due to this microorganism and our option to perform a long course of penicillin derived antibiotics, after suture of a perforated gastric ulcer caused by a foreign body.

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## Introduction

Actinomycosis are chronic and slowly developing infections, caused by bacteria from the genus *Actinomyces*, which are facultative anaerobic or strictly anaerobic gram-positive rods. *Actinomyces* spp. colonize the endogenous mucosa, such as the upper respiratory, gastrointestinal, and female genital tracts, causing disease when injury to the mucosal barrier is present – usually by trauma, surgery or infection.<sup>1</sup>

Numerous species have been described, being *Actinomyces israelii* the most frequent in human infections.<sup>1</sup>

Similarly to other abdominal actinomycosis, infections by *Actinomyces odontolyticus* usually arise from mucous membranes.<sup>2</sup>

The usual sites of invasive disease by this microorganism are the heart, lung and mediastinum. Bacteremia has been described, mainly in immunosuppressed patients.<sup>3</sup>

Abdominal infections caused by *Actinomyces* spp. most commonly occur in patients who have experienced gastrointestinal surgery or have suffered trauma to the bowel.<sup>1</sup> The abdominal cavity as a site of infection accounts for nearly 20% of all actinomycosis sites. There are no recent estimates of the prevalence of this disease, with the estimated population prevalence being one case per 40–119,000 people.<sup>4</sup>

## Case report

A 53-year-old woman, with a medical history of depression, medicated with fluoxetine, trazodone chlorhydrate and clonazepam, came to the Emergency Department due to a 5 days long epigastric pain. Any other symptoms were absent.

During physical examination, the patient was afebrile, vital signs were normal and pain was felt in the upper abdomen on deep palpation – without any signs of peritonitis.

Blood tests were taken and were unremarkable, apart from 14,100 leucocytes/ $\mu$ L (86,6% neutrophils) and an increase in the Reactive C-Protein (3392 mg/L).

A Computerized Tomography (CT) scan was performed, and it revealed a circumferential thickening of the distal gastric wall, with adjacent fat densification and a hypodense collection on the gastric wall, with 3 × 2.3 cm, which suggested the diagnosis of a contained gastric perforation.

The patient was admitted. Conservative treatment was decided, with intravenous fluid therapy, analgesia and broad-spectrum antibiotics – Piperacillin/Tazobactam.

After 48 h as an in-hospital patient, she started to be febrile, which was interpreted as failure of medical conservative treatment, and was submitted to surgery.

Intraoperative findings consisted of abundant fibrosis between the posterior wall of the stomach and the body of the pancreas. Purulent abdominal fluid was collected from the abdomen and sent to microbiological analysis. A 5-cm-long fishbone was extracted from an intramural gastric abscess and a simple suture of the defect was performed.

The patients postoperative course was unremarkable and she was discharged 4 days after the surgery.

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The microbiological analysis of the abdominal fluid identified a single bacterium – *A. odontolyticus*. Hemocultures were negative.

We chose to perform a further 3-week course of parenteral penicillin followed by 8 weeks of oral amoxicillin. Follow-up of this patient, with clinical, analytical and image reevaluation took place three months after surgery – the patient remained asymptomatic, blood tests values were within normal range and the CT scan showed complete resolution of the inflammatory process. The patient was considered to be cured, and antibiotics were suspended. Due to the possibility of recurrence, the patient remains in follow-up.

## Discussion

Abdominal infections caused by *Actinomyces* spp. are uncommon. As for its origin in gastric perforation, around 20 cases have been reported in the literature.<sup>4</sup> Appendicitis is the most common cause (65%).<sup>5</sup>

The preoperative diagnosis of abdominal actinomycosis was not considered in this case. This is consistent with the literature description that only 10% of the cases are diagnosed prior to surgery.<sup>4</sup>

The possibility of a perforated gastric malignancy was considered, as digestive tract actinomycosis is known to mimic malignancy.<sup>6</sup>

The probable cause for infection by this pathogen in this patient was the disruption of the gastric wall due to a foreign body. *Actinomyces odontolytica* is one of the most predominant *Actinomyces* species in biofilms on tooth surfaces. It is also common in the pharynx and in the distal esophagus. This last site has a relatively stable environment for bacterial colonization by the agent.<sup>7</sup>

Little is known about the virulence factors of *Actinomyces* spp., but they are able to evade clearance by the host immune system and, thus, cause a chronic invasion.<sup>6</sup> While the vast majority of actinomycosis-related infections are polymicrobial (up to 95%),<sup>7</sup> in this particularly clinical case, *Actinomyces odontolytica* was the only identified pathogen.

Abscess drainage and long course of antibiotics with penicillin derived antibiotics is the recommended treatment for infections caused by *Actinomyces* spp.<sup>8</sup>

Long-term antibiotics (up to a year) may be required.<sup>4</sup> This concept is changing, as when optimal surgical resection of infected tissues is achieved, a 3-month course of antibiotics is possible.<sup>6</sup> The actual role of surgery usually takes place in cases of extensive necrotic lesions or when antimicrobial therapy fails.<sup>7</sup>

Actinomycosis infections can recur years after initial treatment or may linger asymptotically if primary treatment is not curative.<sup>4</sup>

CT-scan or Magnetic Resonance Imaging are used to perform the follow-up on patients with medical treatment.<sup>5</sup> We opted to perform a CT-scan three months after surgery, despite her being asymptomatic, to ensure the complete resolution of the collection, which could otherwise lead to recurrence of the infection.

## Conflicts of interest

The authors declare no conflicts of interest.

## References

1. Murray PR, Rosenthal KS, Pfaller MA. Anaerobic, non-spore-forming, gram-positive bacteria. In: Medical microbiology. 7th ed. Philadelphia: Elsevier; 2013.
2. Mitchell RG, Crow MR. *Actinomyces odontolyticus* isolated from the female genital tract. J Clin Pathol. 1984;37:1379–83.
3. Cone LA, Leung MM, Hirschberg J. *Actinomyces odontolyticus* bacteremia. Emerg Infect Dis. 2003;9:1629–32.
4. Ferrari TCA, Couto CA, Murta-Oliveira C, Conceição SA, Silva RG. Actinomycosis of the colon: a rare form of presentation. Scand J Gastroenterol. 2000;1:108–9.
5. Russo TA. Agents of actinomycosis. In: Bennett JE, Dolin R, Blaser MJ, editors. Mandell, Douglas and Bennet's Principle and practice of infectious diseases. 8th ed. Philadelphia: Elsevier, Saunders; 2014. p. 2864–73.
6. Valour F, Sénéchal A, Dupieux C, Karsenty J, Lustig S, Breton P. Actinomycosis: etiology, clinical features, diagnosis, treatment, and management. Infect Drug Resist. 2014;7:183–97.
7. Könönen E, Wade WG. Actinomycosis and related organisms in human infections. Clin Microbiol Rev. 2015;28:419–42.
8. Garner JP, Macdonald M, Kumar PK. Abdominal actinomycosis. Int J Surg. 2007;5:441–8.