

## Small Bowel Obstruction and Cecal Mass due to Actinomyces

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Pelvic inflammatory disease is a common disease that usually presents as pelvic pain and fever. Mechanical small bowel obstruction caused by a tubo-ovarian abscess is rare. We describe a patient who presented with small bowel obstruction caused by tubo-ovarian abscess of *Actinomyces* spp. We also describe the association between this pathogen and findings mimicking intestinal neoplasm.

### Patient Description

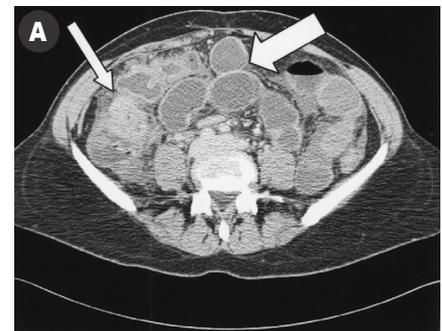
A 48 year old woman was admitted to our emergency department because of recurrent vomiting and diffuse abdominal pain lasting 6 days. Her medical history was unremarkable except for an intrauterine device inserted 8 years previously. On examination, she appeared ill, her pulse was 108 beats/minute, and temperature was 38.4°C. The abdomen was distended with diffuse tenderness but without peritoneal irritation. The rest of the examination was unremarkable. Her white blood cell count was 19,000 cells/μl. Plain abdominal X-ray showed distended loops of small bowel with air-fluid levels. Computerized tomography scan revealed distended small bowel loops with transition zone at the terminal ileum, enhanced mass at the ascending colon, and small amount of free fluid in the peritoneal space [Figure A].

Exploratory laparotomy demonstrated complete small bowel obstruction due to entrapment of the terminal ileum in a large right tubo-ovarian abscess. The loop of the small bowel was freed from the abscess and a right salpingo-oopho-

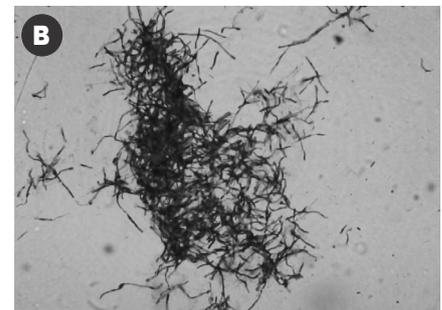
rectomy was performed. Palpation of the bowel revealed a firm cecal mass that appeared intraluminal. At this point we were faced with a diagnostic and therapeutic dilemma. We decided to perform a right hemicolectomy because of the possibility of colonic neoplasm. The postoperative course was uneventful. Histopathology showed a tubo-ovarian abscess containing *Actinomyces* spp., fibrotic and distorted colonic tissue without signs of neoplasm. Culture from the abscess cavity grew *Actinomyces* spp. [Figure B]. The patient was treated with intravenous ampicillin 3 g four times a day for 3 weeks and discharged with oral amoxicillin 2 g twice daily for 9 months.

### Comment

Tubo-ovarian abscess is a well-known complication of pelvic inflammatory disease [1]. The classical symptoms and signs are lower abdominal pain, fever, tachycardia, adnexal mass, abdominal tenderness, intestine ileus, nausea and vomiting. The bacteria most commonly implicated in pelvic inflammatory disease are *Neisseria gonorrhoeae* and *Chlamydia trachomatis*. Anaerobic bacteria are infrequently involved. *Actinomyces* spp. are slow-growing true-branching Gram-positive obligatorily anaerobic bacteria [2]. The term actinomycosis is derived from the Greek words *aktino*, referring to the ray shape of the organism, and *mykes*, erroneously designating the infection as fungal [3]. The spp. includes *israelii*, *naeslundii*, *viscus*, *odontolyticus* and *meyerii*. These bacteria cause various



[A] CT scan of the patient's abdomen demonstrating distended small bowel loops (thick arrow) and well-enhanced mass at the ascending colon (thin arrow).



[B] High power view (x400) of microbiologic culture of *Actinomyces*. The bacteria have grown after 5 days of incubation.

diseases depending on the organ involved. The incidence of diseases caused by the bacteria has been increasing over the last two decades.

Actinomycosis infections are characterized by chronicity, development of sinus

tracts, refractoriness of the infection and relapse after a short course of therapy. *Actinomyces* spp. are members of the normal upper gastrointestinal tract and the genital flora. Disruption of normal flora or damage to the mucosa results in invasion and spread of the bacteria. Similar to the patient described here, there appears to be an association between intrauterine devices and increased risk for developing tubo-ovarian abscess caused by actinomycosis [4]. This disease rarely develops in patients who had the IUD for less than a year, and can also occur months and even years after removal of the device.

Identification of the pathogen is often made by the pathologist. The classical histopathologic presentation includes acute and chronic inflammation with fibrosis, granulation and sulfur granules that are made of matrix of the bacteria, calcium phosphate and host material. The bacteria can be incubated and cultured in 35°C in an anaerobic environment. Growth of the bacterial colonies usually takes more than 5 days. Therapy consists of surgical

debulking of the involved tissue and long-term administration of high-dose antibiotics.

Our patient's presenting symptoms were fever and abdominal pain, and complete small bowel obstruction was diagnosed. The manifestation of tubo-ovarian abscess causing mechanical obstruction of the small bowel is rare. Structural distortion of normal bowel wall, mimicking a neoplasm has already been reported [5]. The cecum and terminal ileum are involved in 65% of the cases in which the intestine was infected by actinomycosis. Predisposing factors are previous operations, appendicitis, foreign bodies, bowel perforation, tubo-ovarian abscess and neoplasm. The firm intestinal mass caused by the chronic inflammation may mimic colonic carcinoma.

In conclusion, actinomycosis of the intestine is a rare disease. The general surgeon must be familiar with this rare but important pathology. Involvement of the intestine may simulate a neoplasm. The finding of an incidental colonic mass during surgery for a tubo-ovarian abscess

should raise the suspicion of actinomycosis infection.

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