

Isolation of *Streptococcus thoralensis* from an Abdominal Wall Abscess in a Young Female: A Case Report

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Abstract

Objective: *Streptococcus thoralensis* is a recently described species, isolated from the intestinal and genital tracts of swine and from rabbit feces. We describe here a case of enterocutaneous fistula complicated by abdominal wall abscess formation attributable to *S. thoralensis*. To our knowledge, this is the second reported human infection by this organism.

Clinical features: Our patient is a 44-years-old diabetic female, with a previous history of ovarian mixed germ cell tumor treated with surgery and adjuvant chemoradiotherapy, presenting 18 years later with an enterocutaneous fistula complicated by abdominal wall abscess formation at the site of previous surgery. Culture from the drained pus and fistulous tract revealed *streptococcus thoralensis*.

Outcome: The patient was treated conservatively with broad spectrum antibiotics and total parenteral nutrition. She suffered from disseminated intravascular coagulation and acute liver failure and passed away 4 weeks later.

Conclusion: We report for the second time the isolation of *streptococcus thoralensis* associated with a pathological process in humans. The infectious role of this newly identified organism pattern in human diseases is yet to be identified.

Keywords: *Streptococcus thoralensis*; Human infection; Abdominal wall abscess; Total parenteral nutrition

Abbreviations: CT: Computed Topography; IV: Intravenous; ALT: Alanine Aminotransferase; AST: Aspartate Aminotransferase; LDH: Lactate Dehydrogenase; WBC: White Blood Cell Count; INR: International Normalized Ratio; DIC: Disseminated Intravascular Coagulation

Introduction

Streptococcus thoralensis is a gram-positive coccus first isolated in 1997 from the vaginal fluids and intestines of pigs, and their involvement in pathological processes was not evident [1]. In the year 2010, *streptococcus thoralensis* was isolated from rabbit feces, and appeared to be beneficial in the digestive process of the rabbit [2]. The first reported human infection was in the year 2015 in a case of chorioamnionitis with paternal swine exposure, susceptibility testing of the strain showed intermediate resistance to penicillin and erythromycin, and susceptibility to cefotaxime, ceftriaxone, and chloramphenicol [3] Also, *streptococcus thoralensis* was isolated from the human oral flora in 2016 [4] and 2017 [5] in India and Saudi Arabia, respectively. One reported case of nasal flora colonization showed resistance to most antibiotics, including *vancomycin* [6].

Literature review was done searching the following databases: PubMed, EMBASE and Cochrane database in November 2018 using the keywords *streptococcus+thoralensis*. There have been 4 reported cases in humans till this point, one of them showing pathological process. Our case will be the second reported human infection with *streptococcus thoralensis*, and the fifth reported case of human colonization with this newly discovered micro-organism. Our patient is a 44-year-old diabetic female, with a previous history of ovarian mixed germ cell tumor treated with surgery and adjuvant chemoradiotherapy, presenting 18 years later with an enterocutaneous fistula complicated by abdominal wall abscess formation at the site of previous surgery. Culture from the drained pus and fistulous tract revealed *streptococcus thoralensis*.

Case Presentation

The patient is a 44-year-old single Mediterranean female. She was 163 cm in height, and 71 kg in weight. She worked in a clothes store. She first presented to our clinic in September/2018 with a chief complaint of non-specific lower abdominal pain. It was intermittent, associated with nausea, vomiting and anorexia but no documented weight loss, no change in bowel habits and no lower urinary tract symptoms. There was no documented fever or chills. Patient had a history of left salpingo-oophorectomy and staging laparotomy in 2000 and was found to have stage III mixed germ cell tumour, after that she received 5 courses of chemotherapy (bleomycin, cisplatin and etoposide). In year 2001, she suffered from right ovarian metastasis, and underwent right oophorectomy with excision of a huge pelvic mass measuring 15 × 15 cm, the abdominal wall defect was repaired with synthetic mesh. Histopathology revealed mixed germ cell tumour and was treated with adjuvant chemoradiotherapy. There is no family history of malignancies, and she never smoked or tried recreational drugs before. She had seasonal allergy, but no known drug allergies, and she didn't take any medications.

Upon examination, she had an indurated tender lower abdomen with no overlying skin change. There was a midline laparotomy scar with 2 lower abdominal wall scars and no palpable abdominal masses.

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Her labs results revealed a normal liver function and kidney function tests, a C- reactive protein level of 131 mg/dL and no leukocytosis. An abdominopelvic CT image with IV contrast was done and showed an abdominal wall collection noted at the site of previous surgery measuring 6.5 × 2 cm with few air bubbles (Figure 1). She was admitted under our care to the surgical ward and had a 3-day trial of intravenous antibiotics (imipenem/cilastatin). She did not show any signs of improvement, so she underwent incision and drainage of the abdominal wall abscess, with removal of the synthetic mesh previously used as it was rejected by the body (Figure 2). The enterocutaneous fistula was inspected in the operation room and was originated from the small bowel. Cultures were sent from the site of fistula and they revealed *streptococcus thoraltensis*; susceptible to *chloramphenicol*, *clindamycin*, *erythromycin*, *levofloxacin*, *tigecycline* and *vancomycin*, and resistant to *ampicillin*, *oxacillin* and *gentamicin*.

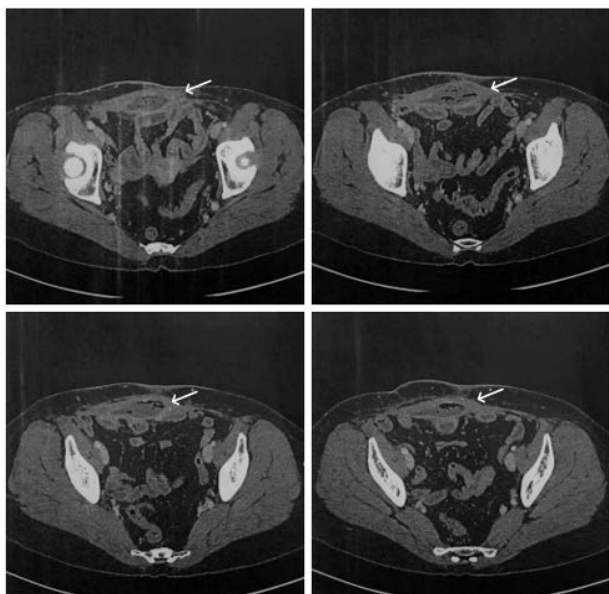


Figure 1: Abdomen and pelvis CT scan showing the abdominal wall collection marked with an arrow.

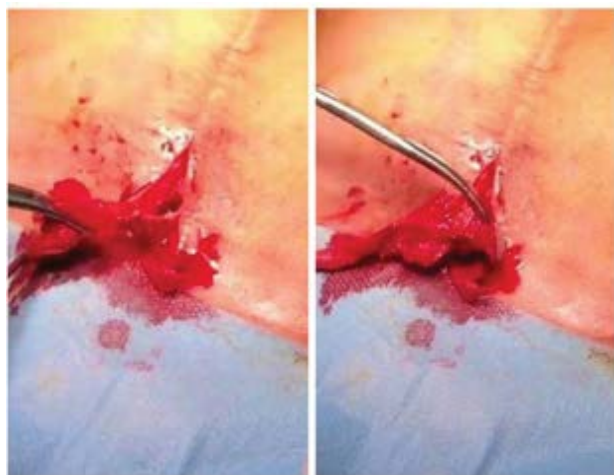


Figure 2: The rejected synthetic mesh found intraop.

The patient had a high output enterocutaneous fistula during the first week, and then the output started to decrease gradually. She was also found to have elevated glycosylated haemoglobin A1c and was diagnosed with diabetes type II. The treatment of this patient consisted of keeping her nil by mouth, total parenteral nutrition, in addition to replacement of her stoma output with ringer lactate and control of her blood sugar readings with subcutaneous actrapid injections. She also received regular daily doses of acetaminophen (up to 4 grams IV daily), in addition to regular IV proton pump inhibitor, anti-emetic and anticoagulation with enoxaparin sodium. She was maintained for 4 weeks on total parenteral nutrition through a peripherally inserted central catheter. She suffered from an episode of diabetic ketoacidosis 4 weeks after the admission and was transferred to the surgical intensive care unit and managed with IV fluids and actrapid continuous infusion. Once treated for the diabetic ketoacidosis, she had persistent hypotension unresponsive to intravenous fluid resuscitation and was started on noradrenaline support. She complained of diffuse abdominal pain, nausea and vomiting. A CT image for her brain, chest, abdomen and pelvis with intravenous contrast was done with no significant findings. Her mental status started deteriorating, and her serum ammonia level reached 294 with a marked decline in liver function tests (ALT: 5 mg/dL, AST: 4 mg/dL, WBC: zero, Platelets: 66, direct hyperbilirubinemia, acute kidney injury, elevated LDH, elevated INR). The blood cultures were negative, cultures from the central line were negative. She showed a drop-in haemoglobin as well, the blood film showed pancytopenia, hypochromic microcytic anemia with anisocytosis and dysplastic neutrophils. She also developed partial adrenal insufficiency and had positive hepatitis A antibodies in serum in addition to positive DIC workup. She started bleeding from the fistula, and from her gingiva as well as bilateral pulmonary haemorrhage manifested on the chest x-ray. She was treated with daily factor VII, platelets, fresh frozen plasma, cryoprecipitate, packed RBCs, broad spectrum antibiotics, vitamin K, dexamethasone, filgrastim, antifungal agent, thiamine and lactulose. She became hypotensive and hypoxic 3 days after, and was intubated on maximum noradrenaline support, and passed away 1 day later.

Discussion

There is only one reported case with an infection with *streptococcus thoraltensis* reported in literature [3]. A PubMed search conducted using the search term “*Streptococcus+thoraltensis*” returned seven citations, four of them involving humans, with one human infection identified. One of the limitations of the study would be the death of the patient, we could not elaborate more regarding any swine or rabbit exposure. A significant limitation to this report as well is the method used to identify the pathogen. Conventional phenotypic bacterial identification methods have been used rather than the more specific 16s rRNA typing. The lack of 16s rRNA typing represents a potential limitation to the certainty of the organism’s identity of this case report. Nevertheless, identification of *S. thoraltensis* from the fistulous tract presents a strong case to implicate this organism.

Conclusion

This case report provides a new insight in the field of microbiology. Although this bacterium has been reported in animals, their role in causation of infections in human beings and their pathogenic significance in the human abdominal cavity cannot be underestimated. Further detailed studies with special reference to their pathogenic significance in human beings by detecting virulent genes/factors will help in achieving more useful and concrete conclusions.

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