A Case of Actinomyces Odontolyticus Infection Three Months Post-Robotic Assisted Laparoscopic Prostatectomy

Introduction

The Actinomyces species of bacteria is believed to date back to the 3rd century AD where is was identified in the ribs of a man in Ontario (1). The first Actinomyces bacterium proven to cause disease in humans, named *Actinomyces Israelii* was identified in 1878 (2), and discovered to grow anaerobically in 1891 (3). Since this time a further 9 species of Actinomyces bacteria were identified in humans, as well as dogs and cats, and is interestingly the most common infectious disease of Kangaroos (4).

The species *Actinomyces Odontolyticus* was first isolated by Batty in 1958 in a patient with advanced dental decay (5). It is a Gram-positive Bacillus Bacteria (fig.1).

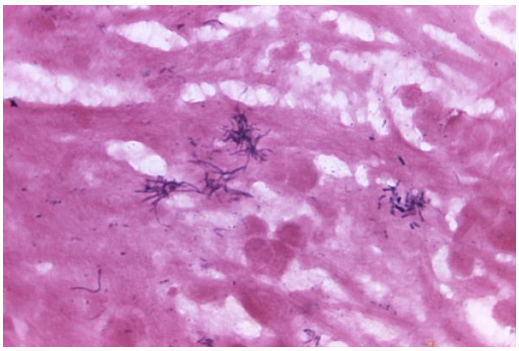

Figure 1: Photomicrograph of A. Odontolyticus Bacteria showing its Gram-positive Bacillus shape magnified x1800 (A. Odontolyticus Bacteria magnified x1800 photomicrograph [Internet]. 2012 [cited 9 September 2018]. Available from: http://www.publicdomainfiles.com/show_file.php?id=13546053617844)

From its discovery in 1958 until 2003 there were a total of 25 *A. Odontolyticus* cases throughout Europe, Asia, and North America, with infections being found all over the body from the mediastinum, soft tissue, and abdomen, to the brain, pelvis, and cardiopulmonary systems (2).

The following describes a case of A. Odontolyticus infection in an immunocompetent patient with bacteraemia following a robotic assisted laparoscopic prostatectomy and extended pelvic node dissection (RALP and ePLND) 3 months previously.

The Case

The Patient is a 60-year-old male who presented acutely to the Emergency Department in August 2018 following a 1-week history of general malaise, fever, rigors, and nausea after returning from Mexico on holiday 1 week previously. There was no clear indication of the source of infection.

Past medical history included Gleason 7 Prostate cancer, which was treated with and uneventful RALP and ePLND in May 2018 with no complications. Post-operative pathology revealed xx, and the patient was commenced on bicalutamide 150mg daily due to positive margin disease. He also had a history of hypertension and previous right humeral fracture.

Blood tests on admission demonstrated a CRP of 316, White Cell Count (WCC) of 13.6, and slightly deranged LFTs. Chest X-Ray was clear, and a urine dipstick showed no signs of infection. It was decided that the patient should be admitted to the infectious diseases ward for IV antibiotics, cultures, and repeat bloods.

With the symptoms of swinging pyrexia, high CRP, neutrophilia, and a vague lower abdominal pain during urination, it was felt that urosepsis was the most likely diagnosis, so the patient was started of amoxicillin and gentamicin, along with more bloods, including cultures and a malaria screen.

Further bloods showed a continued high WCC, with neutrophilia and a CRP of 304, with a negative malarial antigen. Preliminary results from the blood cultures noted a gram-negative bacterial growth, thus gentamicin was continued, with the amoxicillin being stopped in favour of co-amoxiclav.

CT of the abdomen and pelvis showed features of an infected lymphocele in the left hemipelvis (figure 2), which could potentially be drained percutaneously, a smaller collection in the right pelvic sidewall without inflammatory features, extensive pelvic inflammatory changes, and shallow bibasal pleural effusions with adjacent atelectasis.

(picture of collection)
(figure 2: CT Scan of the Patient showing the infected lymphocele collection in the left hemipelvis)

On day 4 of IV antibiotics, the bloods cultures came back having grown *Actinomyces Odontolyticus*, with pending sensitivities.

A pelvic drain was then inserted and left on free drainage with 4 hourly flushes. By day 8 of antibiotics, the patient was feeling much better, with CRP now down to 185, however there were issues with the drain due to the viscosity of the pus associated with actinomyces bacteria. Over the coming days, the patient became afebrile with CRP dropping to 85 and WCC down to 10.8. A repeat drain was inserted, and it was decided that the Patient would have a total of 2 weeks of IV antibiotics before an oral switch, with oral antibiotics being long-term up to 12-18 months.

The latest cultures of drain fluid showed no growth, and the latest CT showed no change in the Left hemipelvis side wall collection. Another drain was then inserted guided by CT and left on free drainage. This new drain was not draining anything however, with no culture growth continuing. After 16 days of IV antibiotics, the Patient was switched to Oral. On Day 18 of admission, the drain was removed, with CRP now down to 38 and WCC now 9.5.

The Patient was discharged 19 days after admission on 1g of Amoxicillin 3 times daily. A review by the infectious diseases team is planned for 3 months' time, with the possibility of 6-12 months of oral antibiotics.

Cases like that of this patient highlight the importance of having an effective sepsis protocol, such as the sepsis 6, and effective strategies for recognising sepsis early. This was done very well in this case. This case also shows the importance of considering atypical organisms as causative agents in sepsis, and the importance of good history taking in ruling in and out different organisms.

<u>References</u>

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