VENTILATOR ASSOCIATED PNEUMONIA IN A NEW TRACHEOSTOMY PATIENT: A RARE CASE OF RAOULTELLA ORNITHINOLYTICA

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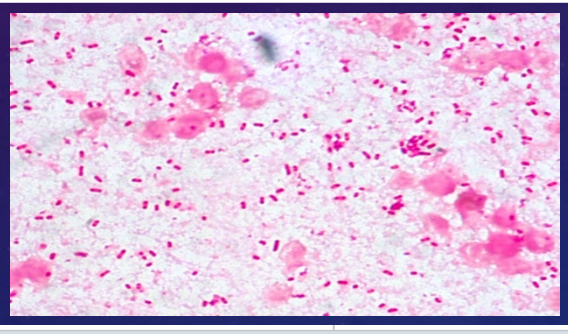
Background

Raoultella Ornithinolytica

- Gram negative rods
- Inhabit aquatic environments
- Able to convert histidine to histamine in scombroid which causes fish poisoning
- Rarely pathogenic
- Able to form biofilms
- Often multidrug resistant organism
- Associated with uncontrolled diabetes and immunosuppression
- High mortality rate (5%)
- 95% of time resistent to amoxicillin



Case

55-year-old male with past medical history poorly controlled type II diabetes mellitus, hypertension, coronary artery disease status post coronary artery bypass graft, end-stage renal disease on hemodialysis, peripheral vascular disease status post left forefoot amputation, atrial fibrillation on apixaban, obstructive sleep apnea and non-compliant with CPAP admitted for PEA arrest. Due to prolonged acute hypoxic hypercapnic respiratory failure patient required tracheostomy.

After tracheostomy, despite antibiotic coverage with cefazolin, patient continued to have fevers, uptrending white blood cell count and consolidation on chest x-ray. Cefepime was added for coverage and a bronchoscopy performed. Vancomycin was added. Due to continued fevers, antibiotics were changed again to Piperacillin/Tazobactam and clindamycin . Bronchoalveolar lavage cultures grew pan-sensitive R. ornithinolytica. After 18 days, patient clinical status improved and discharged to a long-term acute care facility with two additional days of clindamycin.

Raoultella (K.) ornithinolytica		
	Generic Interpretation	Generic Interpretation Numeric
Ampicillin/Sulbactam	Susceptible	4 SUSCEPTIBLE
Cefazolin	Susceptible	<=4 SUSCEPTIBLE
Ciprofloxacin	Susceptible	<=0.25 SUSCEPTIBLE
Gentamicin	Susceptible	<=1 SUSCEPTIBLE
Levofloxacin	Susceptible	<=0.12 SUSCEPTIBLE
Piperacillin/Tazobactam	Susceptible	<=4 SUSCEPTIBLE
Tobramycin	Susceptible	<=1 SUSCEPTIBLE
Trimethoprim/Sulfamethoxazole	Susceptible	<=20 SUSCEPTIBLE

Discussion

R. ornithinolytica is an uncommon pathogen and rare cause of ventilator associated pneumonia. It is a life-threatening infection and extremely pathogenic due to its ability to form biofilms.

There has been a correlation between diabetes mellitus and immunosuppression with R. ornithinolytica infections. Our patient was a poorly controlled diabetic which may have made him more susceptible to R. ornithinolytica infection. Poorly controlled diabetics are often a mainstay in ICUs throughout the country due to diabetic ketoacidosis, hyperosmolar hyperglycemic state, steroid induced hyperglycemia or simply stress induced hyperglycemia.

Our patient was fortunate that his R. ornithinolytica strain was pan-sensitive. Although given patient required over 20 days of four full antibiotic courses (Piperacillin/Tazobactam, vancomycin, cefepime, clindamycin) to control the infection, it was likely the result of a biofilm that formed within the ventilator circuit, catheter or catheter sheath.

Based on the patient's clinical course with a pan-sensitive strain of R. ornithinolytica, a multi-drug resistance strain would have caused a worse, and potentially deadly, clinical course. The combination of a multi-drug resistant organism with the ability to form a biofilm makes R. ornithinolytica a deadly bacterium that must be treated aggressively.