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Raoultella Planticola in a Soft Tissue Infection! An Emerging Pathogen

Luqman Salahudeen[1,*], Paulisa Ward[2], Rekha Kumari[2], Efemena Diejomaoh[3], Vel Sivapalan[1], Simona Bratu[1]

[1]Division of Infectious Disease Department of Medicine, Harlem Hospital Center in Affiliation with Columbia University College of Physicians and Surgeons, New York, United States
[2]Department of Medicine, Harlem Hospital Center in Affiliation with Columbia University College of physicians and Surgeons, New York, United States
[3]Research Department, Therapeutic Concepts, Houston, United States
*Corresponding author: luqmandator@yahoo.com

Abstract *Raoultella planticola* is a gram-negative aerobic bacillus commonly found in water, plant and soil. Few cases have been reported of this organism affecting humans. We present the case of 68-year-old woman with a five-day history of inability to move right hand. Physical examination revealed an erythematous fluctuant swelling which was incised and drained. Drainage specimen was cultured and grew *Raoultella planticola* susceptible to augmented penicillin's. Patient achieved significant clinical improvement following treatment with ampicillin-sublactam. Clinicians should be aware of this emerging pathogen as a cause of soft tissue infection in humans.

Keywords: *Raoultella planticola, gram-negative, soft tissue, infection, humans*

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1. Introduction

Raoultella planticola is a gram-negative, aerobic bacillus belonging to the *Enterobacteriaceae* family. It is commonly found in water, soil, plant and has been implicated in histamine fish poisoning associated with consumption of scombroid fish due to its ability to decarboxylate histidine to histamine [1,2]. *Raoultella planticola* was previously called *Klebsiella planticola* and *Klebsiella trevisanii* until 2001 when the new genus was created based on 16S rRNA and *rpoB* genetic sequences and named after Didier Raoult [3]. Due to its close relation to *Klebsiella species*, it can be misidentified as *Klebsiella pneumonia* or *Klebsiella oxytoca* [4]. *Raoultella planticola* is a rare cause of human infections, but in recent times it has been isolated in the hospital environment in patients with a history of cancer, immune-suppression and recent exposure to traumatic or invasive medical procedures [9,10]. The organism's definitive pathogenic mechanism is still largely unknown.

2. Case Presentation

We present the case of a 68-year-old woman with no comorbidities who presented to our institution with a five-day history of pain, swelling and inability to move right hand. There was no history of abrasion or trauma to the hand. Vital signs were within normal limits. Physical examination revealed erythematous fluctuant local swelling in right hypothenar eminence with no obvious skin breakdown. Laboratory tests was remarkable except for peripheral white blood cell count (WBC) count of 5,500/cmm^3.

Incision and drainage performed yielded copious amount of brownish purulent fluid which was sent for gram stain and culture. Identification done with VITEK 2 automated system revealed *Raoultella planticola* susceptible to augmented penicillin's, cephalosporins, carbapenems, monobactams, aminoglycosides and fluoroquinolones. Patient achieved significant clinical improvement at fourth day of hospitalization following treatment with ampicillin-sublactam.

3. Discussion

Raoultella planticola is a gram-negative aerobic bacteria predominantly found in the environment and was previously identified as a specie of genus *Klebsiella*. Pathogenicity of this organism is similar as *Klebsiella species* and is determined by production of adhesins, siderophores, hemagglutinins, capsular polysaccharides, cell surface lipopolysaccharides, type 1 fimbriae and toxins. Additional virulence factors include histamine, bacteriocin and colonization factor antigens (CFA/I and CFA/III) [11]. The literature is growing on number of cases reported on *Raoultella planticola* affecting humans. Since 1984, thirty-four cases have been reported, four of which are soft tissue infection in humans [4,5,6,7,8]. To our knowledge, this is the fifth case of *Raoultella planticola* causing soft tissue infection.

In this unique case of soft tissue infection, the patient was healthy without history of trauma or overt skin breakdown. The proposed mechanism of infection is possible skin micro-abrasion followed by contamination with this common environmental organism. Infection with *Raoultella planticola* is on the rise [9] and it is imperative for clinicians to be aware of the emergence of this pathogen in humans.

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