

## Case Report

# Pharyngeal and peritonsillar abscess due to *Leclercia adecarboxylata* in an immunocompetent patient

Rishi Bali, Parveen Sharma, Komal Gupta, Saurabh Nagrath

*Pt. B. D. Sharma University of Health Sciences, Haryana, India*

### Abstract

*Leclercia adecarboxylata* was isolated in pure culture from a peritonsillar and lateral pharyngeal abscess in an immunocompetent host. To our knowledge, this is the first case of infection caused by this microorganism being found in an odontogenic area of the head and neck.

**Key words:** *Leclercia adecarboxylata*; odontogenic; abscess

*J Infect Dev Ctries* 2013; 7(1):046-050.

(Received 20 March 2012 – Accepted 10 June 2012)

Copyright © 2013 Bali *et al.* This is an open-access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

### Case report

A 32-year-old otherwise healthy male patient reported to the department with a chief complaint of unilateral neck pain, along with difficulty in swallowing, breathing and talking for two days. He had no history suggestive of a medically compromised state. There was a positive history of tobacco chewing for 15 years; however, there was no history of other health-compromising personal habits such as smoking or betel leaf chewing (with or without areca nut and slaked lime paste). No history of immunosuppressive therapy or previous antibiotics or steroid use was present. He was febrile for the past two days and his vitals at the time of admission were as follows: temperature 38.5°C, respiratory rate 21/minute, blood pressure 120/84, and pulse rate 89/minute. The patient's liver function tests, renal function tests, random blood sugar, HIV test and complete blood counts showed no abnormality except that he had neutrophilic leucocytosis (TLC 8900 and neutrophils 79%).

On extraoral examination, facial asymmetry was evident, the left angle region of the mandible was tender, and the left submandibular lymph nodes were palpable, enlarged, tender, discrete and non-fixed. Swelling of 2 x 3 cm in size, extending on an angle from the mandible 2 cm anteriorly and 3 cm inferiorly was noted (Figure 1). The swelling was soft, tender and compressible, and the overlying skin temperature was raised. On intra-oral examination, swelling was present in the left lateral pharyngeal region, 4 x 3 cm

in size, soft, compressible, fluctuant, and tender, and the overlying mucosa was inflamed. The patient displayed poor oral hygiene and his mandibular left third molar was associated with pericoronitis and purulent discharge. A diagnosis of left peritonsillar and left lateral pharyngeal space abscess was made.

Based on examination of vital signs, the patient was diagnosed with severe inflammatory response syndrome (SIRS) likely to progress towards sepsis. Immediate Ringer's Lactate infusion was started and surgical intervention was planned. The mandibular left third molar was identified as the focus of infection and it was extracted under local anaesthesia with sedation. An 18-gauge needle was inserted in the swelling intraorally; a pus sample was aspirated and transferred to a sterile Hiculture collecting device for aerobic culture and a Hiculture transport swab with Amies medium with charcoal (all from HiMedia Laboratories Private Limited, Mumbai, India) was taken for anaerobic culture. The pus sample was sent for culture sensitivity testing. An intraoral incision in the lateral pharyngeal wall was performed and the infection was drained. A corrugated rubber drain was placed and stabilized with sutures (Figure 2).

The patient was started with empirical antibiotic therapy as follows: amoxicillin-clavulanic acid 1.2 gm three times daily and metronidazole 500 mg three times daily intravenously for three days followed by oral doses of the same antibiotics for another three days. The causative organism in the pus was found to be *Leclercia Adecarboxylata*. No other micro-

**Figure 1.** Left lateral view showing deep neck space involvement



**Figure 2.** Intra-oral view showing corrugated rubber drain in place



**Table 1.** Summary of studies relating to *Leclercia adecarboxylata*

S. No.	Immuno-deficiency	Co-infection	Source	Inference	Reference
1, 2, 3	None	Present	Wound	Susceptible to all the antimicrobials tested Isolated as part of a mixed microbial growth	[6]
4	None	Present	Sputum	Susceptible to all the antimicrobials tested Isolated as part of a mixed microbial growth	[6]
5	Neutropenia	None	Blood	Isolates were susceptible to all the antimicrobials tested Isolated as part of a mixed microbial growth	[6]
6, 7	i) Chronically inflamed gallbladder  ii) Sepsis	i) Enterococcus species  ii) <i>Escherichia hermannii</i> and <i>E. faecalis</i>	i) Gall bladder tissue  ii) Blood	The organism was considered clinically significant and was susceptible to all antibiotics tested.	[7]
8	Acute Myeloid Leukemia	None	Blood	This isolate showed a behavior typical of ESBL-producing strains in the Kirby-Bauer test. Namely, it presented resistance to ceftazidime, cefotaxime, aztreonam, and cefepime, and these resistances were reversed by clavulanic acid.	2[]
9	N/A	N/A	Drinking water	<i>Leclercia adecarboxylata</i> : Coliform bacteria regarded primarily as environmental microorganisms Coliform bacteria of possible facultative or opportunistic pathogenicity, rarely detected in clinical research material with sporadic infections	[5]
10	None	Present	Bite wound	Isolated in one patient of human bite (2%)	[3]
11	None	None	Foot wound	In reported cases of immunocompetent patients infected with this organism, it is seen exclusively in the context of polymicrobial infections. The study reported the case of an abscess in an immunocompetent patient that grew out <i>L. adecarboxylata</i> as a pure Culture.	1[]
12	Acute lymphoblastic leukemia	None	Wound	Rare organism's ability to cause common cutaneous disease, especially in the immunocompromised	[4]

S. No. = Serial Number; ESBL = extended spectrum beta-lactamase

organism, aerobic or anaerobic, could be isolated. On culture and sensitivity testing, the pathogen was obtained in pure culture. Antibiotic sensitivity was checked using the Vitek system (Vitek 2 System and Test Cards, bioMérieux SA, Marcy l'Etoile, France). The pathogen was found to be sensitive to the following antibiotics: amoxicillin-clavulanic acid, imipenem, colistin, tigecycline, tetracycline, meropenem, cotrimoxazole, ciprofloxacin, amikacin, gentamycin, ceftriaxone, ceftazidime, cefepime, ciprofloxacin (MIC  $\leq$  0.25) and levofloxacin (MIC  $\leq$  0.12). The patient recovered uneventfully.

## Discussion

*L. adecarboxylata* was first described by Leclerc in 1962 as *Escherichia adecarboxylata* [1]. It is an aerobic, motile, Gram-negative bacillus of the Enterobacteriaceae family. Lysine decarboxylase, malonate assimilation and acid production from arabinol and cellobiose, but not from adonitol and sorbitol, allows definitive separation of *L. adecarboxylata* from *Escherichia coli*. It is universal in distribution, found in a variety of foods, water, and animals (snails and slugs), and commensal in the gut. Only a few instances of pathogenicity have been reported so far, thus emphasizing its nature as an opportunistic agent. In clinical specimens, it has been found primarily as one of the components of polymicrobial infections, which suggests the dependence of this micro-organism on co-flora to cause a disease. Pure cultures have been isolated almost exclusively in immunocompromised patients with only one such culture reported in an immunocompetent individual [1]. It has been shown to be sensitive to most of the antimicrobial agents, although resistance to ceftazidime, cefotaxime, aztreonam, and cefepime [2] has been noted in one study. The table shows the reported cases depicting the immune status of the host, along with the site of isolation of the pathogen and of the co-infection status in each case. We would like to emphasize that this pathogen has so far not been reported in scientific literature from any head and neck space infection, infections in the latter being usually being caused by *Staphylococci*, *Streptococci*, *Bacteroides*, *Fusobacterium*, *Porphyromonas* and *Prevotella* species. In the current case, *L. adecarboxylata* was identified as the lone pathogen causing a peritonsillar and lateral pharyngeal abscess in a non-immunocompromised host. Thus the significance of this case report lies in the fact that this is an infrequent pathogen gaining entry into the head and neck fascial

spaces. It is also suggestive of advancements in the isolation and culturing techniques that have led to accurate identification and segregation of *L. adecarboxylata* from *E. coli*.

## References

- Hess B, Burchett A, Huntington MK (2008) *Leclercia adecarboxylata* in an immunocompetent patient. *J Med Microbiol* 57: 896-898.
- Mazzariol A, Zuliani J, Fontana R, Cornaglia G (2003) Isolation from blood culture of a *Leclercia adecarboxylata* strain producing an SHV-12 extended-spectrum beta-lactamase. *J Clin Microbiol* 41: 1738-1739.
- Talan DA, Fredrick M, Abrahamian, Moran GJ, Diane M, Tan CJO, and Ellie J C Goldstein (2003) Clinical presentation and bacteriologic analysis of infected human bites in patients presenting to emergency departments. *CID* 37: 1481.
- Shah A, Nguyen J, Sullivan LM, Chikwava KR., Yan AC, Treat JR (2011) *Leclercia adecarboxylata* cellulitis in a child with acute lymphoblastic leukemia. *Pediatr Dermatol* 28: 162-164.
- Stevens M, Ashbolt N, Cunliffe D (2003) Coliform bacteria in drinking water: recommendations on risk assessment and measures in the case of systemic contamination. Recommendation of the German Federal Environment Agency (UBA).
- Temesgen Z, Toal DR, Cockerill FR (1997) *Leclercia adecarboxylata* infections: case report & review. *Clin Infect Dis* 25: 79-81.
- Baere T, Wauters G, Huylenbroeck A, Claeys G, Peleman R (2001). Isolations of *Leclercia adecarboxylata* from a patient with a chronically inflamed gallbladder and from a patient with sepsis without focus: *J Clin Microbiol* 39: 1674-1675.
- Fattal O, Deville JG (2000) *Leclercia adecarboxylata* peritonitis in a child receiving chronic peritoneal dialysis: *Pediatric nephrology* 15: 186-187.
- Longhurst CA, West DC (2001). Isolation of *Leclercia adecarboxylata* from an Infant with Acute Lymphoblastic Leukemia: *Clinical Infectious Diseases* 32: 1658-1659.
- Stock I, Burak S, Wiedemann B (2004) Natural antimicrobial susceptibility patterns and biochemical profiles of *Leclercia adecarboxylata* strains. *Clin Microbiol Infect* 10: 724-33.
- Corti G, Mondanell N (2007) Post-traumatic infection of the lower limb caused by rare Enterobacteriaceae and Mucorales in a young healthy male. 17<sup>th</sup> European Congress of Clinical Microbiology and Infectious Diseases/25<sup>th</sup> International Congress of Chemotherapy, Munich, Germany March 31 to April 3.
- Davenport P and Land KJ (2007) Isolation of *Leclercia adecarboxylata* from the blood culture of an asymptomatic platelet donor. *Transfusion* 47: 1816-1819.
- Lee B, Sir JJ, Park SW, Kwak CH, Kim SM, Kim SB, Kwak YG, Whang DH, Cho WH, Choi SK. Ju (2009) A Case of *Leclercia adecarboxylata* endocarditis in a woman with endometrial cancer. *Am J Med Sci* 337: 146-147. doi: 10.1097/MAJ.0b013e31817bf997.
- Myers KA, Jeffery RM, Lodha A (2012) Late-onset *Leclercia adecarboxylata* bacteraemia in a premature infant in the NICU. *Acta Paediatrica* 101: e37-39.
- Forrester JD, Adams J, Sawyer RG (2012) *Leclercia adecarboxylata* bacteremia in a trauma patient: case report and review of the literature. *Surg Infect (Larchmt)* 13: 63-66.

**Corresponding author**

Dr. Rishi Bali  
MDS, CHWM, CW Scholar (UK)  
Professor, Department of Oral and Maxillofacial Surgery  
D. A. V. Dental College and M. M. General Hospital,  
Yamunanagar – 135001, India  
Telephone: +91-9315396704  
Fax: +91-1732-227155  
Email: rshbali@hotmail.co.uk

**Conflict of interests:** No conflict of interests is declared.