

CASE REPORT

PASTEURELLA CANIS CAUSING COMMUNITY ACQUIRED LRTI: FOOTSTEP OF A NOVEL DEMON

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ABSTRACT: Pasteurella canis is a Gram-negative, nonmotile, coccobacillus belonging to the family Pasteurellaceae, erstwhile known to be penicillin-sensitive. It is a known causative organism for zoonotic infections especially skin and soft tissue infections after animal bite. It is known to cause respiratory tract infection among immunocompromised patients. Here we present a case of community-acquired lower respiratory tract infection (LRTI) in an apparently immunocompetent middle aged female patient caused by multidrugresistant (MDR) Pasteurella canis biovar2. We suggest the organism to be included in differential diagnosis in such cases.

KEYWORDS: Pasteurella canis biovar-2, LRTI, MDR.

INTRODUCTION: Pasteurella canis is a Gram-negative, nonmotile, penicillin-sensitive coccobacillus belonging to the Pasteurellaceae family.⁽¹⁾ "Micrococcus gallicidus" was the first scientific name used for these bacteria.^(2,3) For a short period of time, the bacteria were unofficially placed in different genera, such as Octopsis, Coccobacillus, and Eucystia. In 1887, genus "Pasteurella" was proposed to honor Louis Pasteur for his critical discoveries in the field of Microbiology.⁽¹⁾ P. canis includes two biotypes: biovar 1 is originated from canine, whereas biovar⁽²⁾ is originated from bovine.⁽¹⁾

Bacteria from this family cause zoonotic infections in humans. These infections manifest themselves as skin or soft tissue infections after an animal bite. It has been known to cause serious disease in immunocompromised patients.^(4,5)

There are few case reports of lower respiratory tract infection in COPD patients caused by canine associated Pasteurella in literature but unfortunately there is lack of correspondences among Indian workers regarding this topic.⁽⁶⁾

Present case report of Lower respiratory tract infection caused by multi drug resistant Pasteurella canis, thus aims at drawing attention of medical fraternity to give enough weightage to this unusual human pathogen.

BRIEF HISTORY OF THE CASE: A 56 year old female patient was admitted with shortness of breath for 15 days. She was not a known case of diabetes mellitus or hypertension. 20 years ago, she suffered from pulmonary Tuberculosis which was treated with full course of antitubercular drugs. At the end of first line of Anti Tubercular treatment schedule, the patient was documented as a cured one. There was no history of canine exposure.

She was alert, conscious and co-operative at the time of examination. Mild anaemia was there. No cyanosis or clubbing was revealed during general examination. Respiratory rate was 30/minute and regular. Bilateral crepitations were present. No abnormality was found in other systems.

She was diagnosed to be a patient of Bronchiectasis diagnosed by Pulmonary HRCT. There was no pleural thickening.

CASE REPORT

MATERIALS & METHODS: Sputum samples were collected on two consecutive days.

Direct smears were stained with gram stain and Ziehl-Neelsen stain. Inoculation on Mac-Conkey's agar plate and Blood agar plate was performed followed by overnight aerobic incubation at 37°C. Discrete colonies were selected for identification and anti-microbial susceptibility testing by Kirby Bauer Disk Diffusion test. For phenotypic identification, VITEK 2 Compact Advanced Expert System (AES) was used.

RESULT: Microscopy of direct smears revealed that Pus cells were plenty (≥ 25 per low power field) and few epithelial cells (≤ 10 per low power field) were present. No acid fast bacillus was found.

After overnight incubation both the samples yielded pure growth of no lactose fermenting, mucoid, round colonies. It was nonhemolytic (Fig. 1 & 2). No characteristic odour or pigment could be identified. When Gram stain was performed, it was found to be Gram-negative coccobacillus that also took bipolar staining (Fig. 3). The microorganism was a nonmotile one. VITEK 2 Compact AES system identified it as *Pasteurella canis* with good confidence level (91%) (Fig. 4). The isolated bacteria was Indole test negative, so it was identified as biovar.⁽²⁾ (Fig. 5).

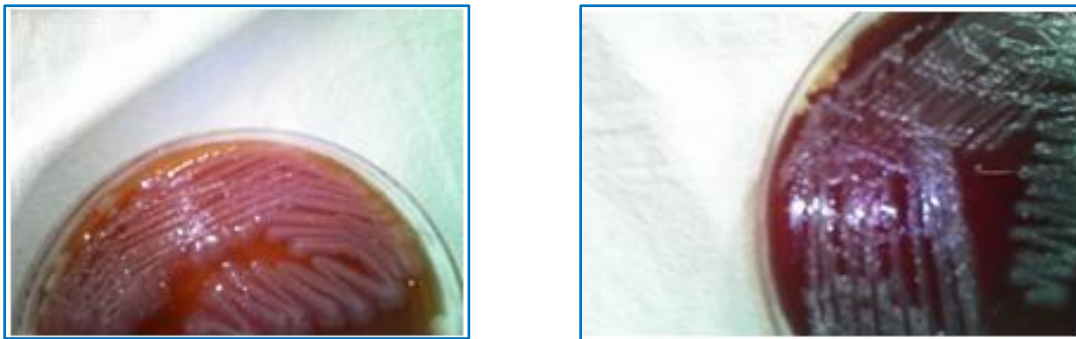


Fig. 1 & 2: Colony of *Pasteurella canis* on Mac-conkey's agar plate

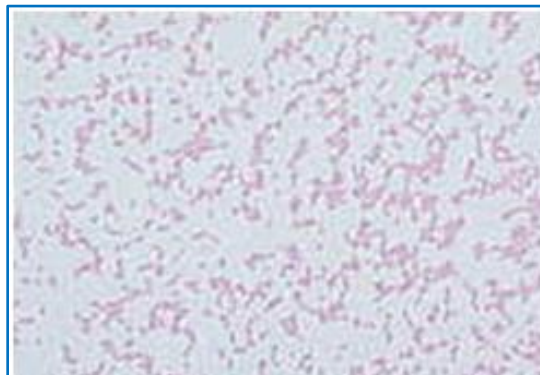


Fig. 3: Gram negative coccobacilli. (1000X)

CASE REPORT



Fig. 4: Biochemical analysis card of Vitek 2 Compact (AES) (1000X)



Fig. 5: Negative Indole test implies that Tryptophanase was not produced by the Isolate

The isolate was sensitive only to Colistin, Polymyxin –B and Tigecycline. It was resistant to all other antibiotics such as Amikacin, Gentamicin, Cefepime, Piperacillin- Tazobactam, Cefoperazone-Sulbactam, Meropenem, Imipenem, Cotrimoxazole and Ciprofloxacin. The finding was confirmed by similar results in all the tests for both the samples.

The patient was treated with intravenous Colistin 1.5mg/kg and clinically recovered after 3 days. Sputum sampling was repeated on the 4th day in which no pathogenic bacteria were grown.

DISCUSSION: Soft tissue infections caused by *Pasteurella canis* were reported by several workers. However, *Pasteurella multocida* is more commonly associated with systemic involvements including respiratory infections.^(7,8,9,10,11,12)

This present case report is unique in several aspects.

First, Community acquired lower respiratory tract infection caused by *P. canis* in a COPD patient without any history of canine exposure. The mystery was solved when the history of bovine exposure was revealed and the isolate was identified as *Pasteurella canis* biovar.⁽²⁾

Second, the organism was found to be sensitive to Colistin, Polymyxin-B and Tigecycline and resistant to all of the first line and second line drugs recommended by CLSI guideline 2014 whereas *Pasteurella canis* isolated by Kim Allison and Jill E. Claridge were sensitive to Penicillin.⁽⁶⁾

The above said case suggests that health care personnels to remain always vigilant to identify the respiratory pathogen in patients with COPD because *Pasteurella canis* has its all potential to become a multidrug resistant emerging threat to mankind if overlooked by medical fraternity.

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CASE REPORT

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CASE REPORT

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