

# *Rothia mucilaginosa* pneumonia in an elderly patient from a tertiary care centre in Kerala

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## ABSTRACT

*Rothia mucilaginosa* (previously *Stomatococcus mucilaginosus*) is a Gram-positive coccus residing in the oral cavity and respiratory tract as a part of normal flora. In the recent years, it has been associated with opportunistic infections in immunocompromised patients. In this case report, we present a case of pneumonia due to *R. mucilaginosa*. The isolate was confirmed using matrix-assisted laser desorption ionisation time-of-flight mass spectrometry system.

**Key words:** Matrix-assisted laser desorption ionisation time-of-flight mass spectrometry, pneumonia, *Rothia mucilaginosa*

## INTRODUCTION

*Rothia mucilaginosa* is a Gram-positive coccus which belongs to the family Micrococcaceae. It was previously designated as *Stomatococcus mucilaginosus*.<sup>[1]</sup> It is considered a part of the normal flora of oropharynx and upper respiratory tract in humans.<sup>[2]</sup> It is a Gram-positive coccus, facultative anaerobe, non-motile, oxidase negative, and catalase variable.<sup>[3]</sup>

The bacterium is emerging as an opportunistic pathogen often present in immunocompromised but also in immunocompetent patients though less frequently.<sup>[4]</sup> There are reports describing the association of *R. mucilaginosa* with pneumonia, endocarditis, meningitis, bacteremia, endophthalmitis, osteomyelitis.<sup>[5,6]</sup> Here, we report a case of pneumonia due to *R. mucilaginosa* which was identified by culture and biochemical reactions and further confirmed using matrix-assisted laser desorption ionisation time-of-flight mass spectrometry (MALDI-TOF MS) system.

## CASE REPORT

A 78-year-old man was admitted to our hospital on November 2013 with a history of cough with expectoration, chest tightness, and dyspnoea on exertion. There was no

history of fever. His past history revealed that he was a known hypertensive on treatment. He was not a diabetic. The patient was diagnosed to have hypertensive heart disease and left ventricular failure with pneumonia.

On admission, he was afebrile with a pulse rate of 99/min and respiratory rate of 24/min. Blood pressure was 140/100 mm Hg. On auscultation, wheeze, and crepitations were present. His complete haemogram was normal with haemoglobin-12.9 g/100 ml, total count-11,500/cu/mm (polymorphs-86, eosinophils-2, lymphocytes-12) electrocardiography showed absent P wave, junctional tachycardia, left ventricular hypertrophy with strain.

The chest X-ray showed patchy and multifocal nodular consolidation. Sputum was sent for microscopy, culture, and antibiotic sensitivity testing. Gram stain of the direct smear showed plenty of pus cells (7-10/oif), epithelial cells and Gram-positive capsulated cocci both intracellular and extracellularly. Acid-fast bacilli were ruled out after Ziehl-Neelsen staining. Fungal culture on Saboraud's dextrose agar showed no growth.

For culture, sputum was centrifuged and inoculated on blood agar and chocolate agar. After 24 h of incubation aerobically at 37°C, blood agar and chocolate agar showed white to grey round, convex, non-haemolytic, mucoid colonies which were adherent to the agar surface. On Gram staining of colonies from the above plates, Gram-positive cocci were present in clusters which resembled those in the direct smear.

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This isolate was catalase negative, oxidase negative, coagulase negative, and reduced nitrates to nitrites. Bile Esculin and Voges-Proskauer also were positive. The strain was analysed with the help of MALDI-TOF MS System (Bruker Daltonics, Billerica, MA, USA) and was confirmed as *R. mucilaginosa* with a score of 2.8.

Antibiotic susceptibility testing was done by Kirby Bauer disc diffusion method. The isolate was first tested for a Gram-positive panel of antibiotics based on Gram stain morphology and was found to be sensitive to Penicillin, Amikacin, Vancomycin, Amoxycylav, Doxycycline, Levofloxacin, Amoxicillin, and Linezolid

Due to suspicion of community-acquired pneumonia she was treated empirically with broad-spectrum antibiotics namely Ceftriaxone and Azithromycin. The susceptibility testing of these two antibiotics were carried out and were sensitive. The patient recovered and was discharged.

## DISCUSSION

In the present case report, we report a case of pneumonia in which *R. mucilaginosa* was the only organism isolated in pure form from sputum culture. *R. mucilaginosa* is considered a member of the normal human oral cavity and upper respiratory tract. Considering the purulent nature of sputum, presence of intracellular Gram-positive cocci in direct sputum smear, and absence of any other significant pathogen in culture, *R. mucilaginosa* was considered to be the causative agent of pneumonia.

There have been fewer than 20 cases of lower respiratory tract infection caused by *R. mucilaginosa* reported worldwide.<sup>[7]</sup> The clinical manifestation of disease ranges from mild bronchitis to pneumonia or recurrent lung abscess.<sup>[8]</sup>

There are no guidelines to assist in antibiotic selection in the treatment of *Rothia* infections. Third generation cephalosporins, high dose Ampicillin, Vancomycin, Rifampicin, Chloramphenicol are reported to be active against *Rothia*. Penicillin used to be the drug of choice for *Rothia* infections.<sup>[9]</sup>

Increased resistance to Penicillin has necessitated the use of other antibiotics in the treatment of *Rothia*.<sup>[10]</sup> In our case, the isolate was found to be sensitive to Penicillin, Amikacin, Vancomycin, Amoxiclav, Doxycycline, Levofloxacin, Amoxicillin, Linezolid, Ceftriaxone, and Azithromycin. Levofloxacin can be concentrated in respiratory tissues and intracellular compartments.<sup>[11,12]</sup> *R.*

*mucilaginosa* pneumonia treated with Levofloxacin generally has a favourable outcome.<sup>[13]</sup>

## CONCLUSION

As *Rothia* is generally considered a commensal of oral cavity and respiratory tract, the case of pneumonia caused by this organism may be missed or under reported. Nonetheless, this organism should be screened for, both in immunocompromised as well as healthy individuals.

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