

Case Report

Isolation of *Morganella Morganii* From Surgical Site Infection: A Case Report

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Abstract:

Background: *Morganella morganii* is gram negative, facultative rod with intrinsic capacity of drug resistance to some beta lactam antibiotics, even reported as Multi Drug Resistant isolates. It is a critical source of nosocomial infection. **Case presentation:** Post operative wound swab from right ear radical mastoidectomy was received from a 24 years old male at Faridpur Medical College Microbiology Laboratory. Mucoid colony at Blood Agar Media, Non-Lactose Fermenting pale colony at MacConkey Agar was found. K/A with no gas at TSI, positive motility, indole and urease activity with citrate and oxidase negative activity was found. Anti-biotic susceptibility pattern revealed resistance to Ampicillin (10µg), Cefuroxime (30µg), Sulfamethoxazole-Trimethoprim (25µg) and sensitive to Amikacin(30µg), Ceftazidime(30µg), Cefazoline(30µg), Ceftriaxone(30µg) and (Ceftazidime- Avibactam30/20µg) with intermediate susceptibility to Imipenem(10µg) and Piperacillin- Tazobactam(100/10µg). **Conclusion:** This study notifies the clinicians about a rare but vicious organism named *Morganella morganii* with its antibiotic susceptibility pattern.

Key words: *Morganella morganii*, Multi Drug Resistant, nosocomial infection.

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Introduction

Morganella morganii is a member of Enterobacterales, formerly known as *proteus morganii*. It is motile, non-lactose fermenting, facultative anaerobe with urease activity. It is usually found in environment and as normal flora of intestine of human, mammals and reptiles.¹

Morganella morganii is an unusual opportunistic gram-negative pathogen with high mortality rate. It can cause a variety of infections from urinary tract infection, post operative wound infection, pneumonia, osteomyelitis, peritonitis to even bacteremia. Virulence factors like fimbrial adhesion, Ig A protease, hemolysin, urease activity, apoptotic toxin, type-III secretion system, Iron acquisition system, Chromosomal inheritance of blaAmpC gene made it intrinsically resistant to beta lactam antibiotics like Penicillin and even to 3rd generation Cephalosporins. Now, it is considered as an emerging superbug.² Combination therapy with at least two antibiotics is needed for proper treatment of complicated cases.³

In Bangladesh its prevalence rate is only 1.72%.² So, here we present a case report of isolated *Morganella morganii* from post-operative wound infection.

Case presentation:

At the Modern Microbiology Lab. Of Faridpur Medical College, we received a wound swab sample from right ear Modified Radial Mastoidectomy surgical site from a male patient after 15 days of operation. The patient was diagnosed as a case of Chronic Suppurative Otitis Media with active squamous. After two weeks of operation when the patients came for stitch removal and follow-up checkup the correspondent physician noticed oozing of pus from the surgical site and referred to us. After receiving the sample microscopy with Gram stain and inoculation was done into 5% Sheep Blood Agar and Eosin MacConkey's Agar media plates, aerobically at 36±1°C for 24 hours. On, blood Agar whitish mucoid colony without any hemolysis was found. On MAC non-lactose fermenter pale mucoid colony was also noticed. Oxidase test was found negative. And bio-chemical panel was K/A, with minimal gas production on Triple Sugar Iron Media, motility, indole and urease positivity was found at Motility Indole Urea Media and citrate negativity was also found on Simmons Citrate Media. Anti-microbial susceptibility testing was done by determination of inhibition zone of diameter around antibiotic discs using

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the Kirby-Bauer's disc diffusion method at Muller Hilton Agar Media according to CLSI breakpoints.⁴ *Escherichia coli* ATCC 25922 reference strain was used for the quality control of antimicrobial susceptibility testing. The anti-microbial susceptibility pattern revealed resistance to Ampicillin(10µg), Cefuroxime(30µg), Sulfamethoxazole-Trimethoprim(25µg) and sensitive to Amikacin(30µg), Ceftazidime(30µg), Cefazoline(30µg), Ceftriaxone(30µg) and Ceftazidime-Avibactam(30/20µg). This isolate showed intermediate susceptibility to Imipenem(10µg) and Piperacillin-Tazobactam(100/10µg).



Figure-1: Muroid colony of *Morganella morganii* at 5% sheep blood Agar Media after 24 hours of incubation.



Fig-2: Non lactose fermenter pale colony on MacConkey Agar Media.

Later the patient was treated according to culture sensitivity test and healed properly.



Fig-3: Biochemical properties of isolated *Morganella morganii*

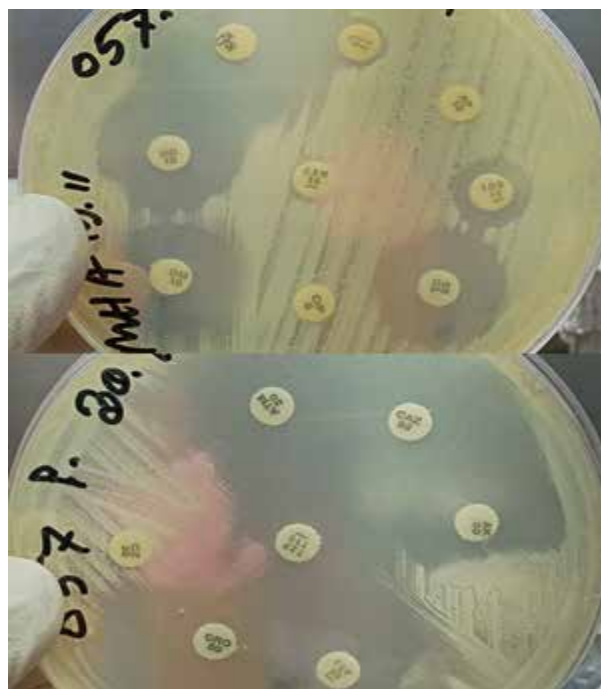


Fig-4: Antimicrobial susceptibility pattern of *Morganella morganii* on MHA.



Fig-5: Condition of patient after 7 days treatment according to Culture & Sensitivity report.

Discussion:

World Health Organization has listed *Morganella morganii* as a global priority pathogen because of its capacity to acquire drug resistance which can cause high mortality rate of the infected patients.⁵ *Morganella morganii* can cause multiple infections but skin and soft tissue infections are relatively more common (19%).⁶ Apart from chromosomal inheritance of AmpC beta lactamase *Morganella morganii* can also acquire drug resistance via plasmid encoded gene like TEM, CTX-M, NDM, KPC, OXA, VIM, TEM-1, SHV-1.^{2,6} All of these, contribute to make *Morganella morganii* as Multidrug Resistant organism. Here, the antibiotic susceptibility pattern showed resistance to 1st and 2nd generation cephalosporine, consistent with Kakurai et al., 2025.⁷ Resistance to Imipenem indicate presence of carbapenemases gene. *Morganella morganii* has been identified as an important cause of nosocomial infection in past years and sometimes combination antibiotic therapy is needed to cure the infection.^{6,8}

Limitations of this study was, we could not apply any automated machine like VITEK-2 for identification and susceptibility testing. Relative data on *Morganella morganii* is very limited in Bangladesh.² So, this presentation will help to proper diagnosis and treatment of *Morganella morganii* infection.

Conclusion:

Enormous disease spectrum of *Morganella morganii* with its resistance pattern make it crucial pathogen specially for nosocomial infection. Multidisciplinary approach is needed for proper care. Our case report is unique because, this is the first isolated *Morganella morganii* in this region and its anti-biotic susceptibility pattern will guide the clinicians to develop proper treatment protocol.

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Consent for publication: Written informed consent was taken from patient himself.

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