Case Report

Comamonas Testosteroni Emerging Gastrointestinal Pathogen

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ABSTRACT:

Comamonas testosteroni newly emerging microorganism previously known as *Pseudomonas testosteroni* is common environmental bacterium that is not known to be a part of the human commensal organism. Since its identification as a human pathogen in 1987, numerous reports have drizzled in, implicating this organism for various infections. *Comamonas testosteroni* are rare isolates in microbiology laboratories and have been infrequently reported as an infectious agent in routine clinical practice. *Comamonas testosteroni* has been rarely observed as an infectious agent in clinical practice. *Comamonas testosteroni* is rarely recognized as a human pathogen. Most of the reported cases are bloodstream infections. We report this pathogen from the stool of an immunocompromised 48-year-old male. The aim of this case report is to alert clinicians and laboratory physicians for the potential diagnosis and clinical approach of gastrointestinal infections caused by this organism.

KEYWORDS: *comamonas testosterone;* gram negative organism; gastrointestinal.

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INTRODUCTION:

Comamonas testosteroni belong to the genus Comamonas, family Comamonadaceae, which are betaprotebacteria in the pseudomonas rRNA homology group III[1]. *Comamonas testosteroni* is aerobic, gram-negative non-fermenting bacterium. They were first discovered in 1894, and since then, 24 species have been characterized. Bacterial species, including *Ralstonia spp, Ochrobactrun spp, Pseudomonas aeruginosa*, *Sphingomonas paucimobilis*, and *Brevundimonas spp*, all belong to this group[2,3,4,5,6].

The natural habitat of these bacteria is soil, wastewater/sludge, fresh water such as ponds and rivers and the animal intestinal flora. They have also been isolated from the hospital environment and clinical samples, such as urine, pus, blood, tissue, stool, and respiratory secretions of cystic fibrosis patients[7]. *Comamonas testosteroni* is thought to be of low virulence. They have, however, caused infections, including serious infection such as septicemia or endocarditis in immunocompetent hosts. Herewith, we present a case of *Comamonas testosteroni* associated from stool.

CASE REPORT:

A 46 years old chronic smoker & tobacco chewer male from urban area was admitted to tertiary care hospital for chronic alcoholic liver disease with acute chronic pancreatitis due to recent alcohol intake. The chief complaint was high grade fever since 5-6 days, difficulty in breathing since last 1-2 hrs, diarrhea & abdominal pain since 1-2 days.

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***Laboratory Investigation*:**

Routine examination showed patient blood pressure was 160/80 mmHG, pulse rate 160/min. Central nervous system, cardiovascular system appeared normal. Abdominal examination revealed tenderness in left epigastria & left hypochondria. Other relevant laboratory finding suggested hemoglobin 9 g/dl, decreased white blood cell count 5,240 mm^3 (neutrophil 84%, lymphocyte 11%), platelet count within normal limit. The serological tests for human immunodeficiency virus, hepatitis B virus surface antigen, and hepatitis C virus were all non-reactive. CRP was dramatically raised to 223.6 mg/L. Stool & Blood culture was sent to the microbiology laboratory.

***Radiological finding*:**

Ultrasonography revealed cholecystitis and small amount of fluid noted in peripancreatic area. Patient was given empirical therapy with fluid and electrolyte replacement and kept on piperacillin-tazobactam & Vancomycin as empirical antibiotic treatment.

***Laboratory workup*:**

Blood Culture was kept in BacT/ALERT/3D automated blood culture system by Biomerieux for 7 days of incubation. Stool culture streaking was done on MacConkey agar, 5% sheep blood agar & XLD agar plate. Other relevant hematological investigation were also performed.

***Findings*:**

In stool culture, after overnight incubation on MacConkey agar, colonies were non-lactose fermenting, small translucent, smooth & without pigment (Figure 1). Sheep blood agar plate showed non-hemolytic, non-pigmented colonies similar as on MacConkey agar. Colonies were Oxidase positive, Catalase positive, Gram negative and motile in hanging drop preparation (Figure 2). They were than processed for identification and sensitivity by Vitek-2 compact by Biomerieux using GN and N406 for identification and sensitivity respectively. It was identified as *Comamonas testosteroni* with 99% probability. It was found sensitive to Gentamicin, Amikacin, Imipenem, Meropenem, Piperacillin-Tazobactum, Cefoperazone-sulbactum, Cefepime and Minocycline. And it was found resistant to Ofloxacin, Colistin, Ceftazidime, Aztreonam, Ciprofloxacin, Levofloxacin and Trimethoprim-Sulfamethoxazole. Blood culture of the same patient remained sterile for 7 days of incubation. Therapy was changed to Gentamicin 4 mg/kg/dose daily and imipenem 25 mg/kg/dose 8 hourly for 10 days. The patient responded well to antibiotic therapy.

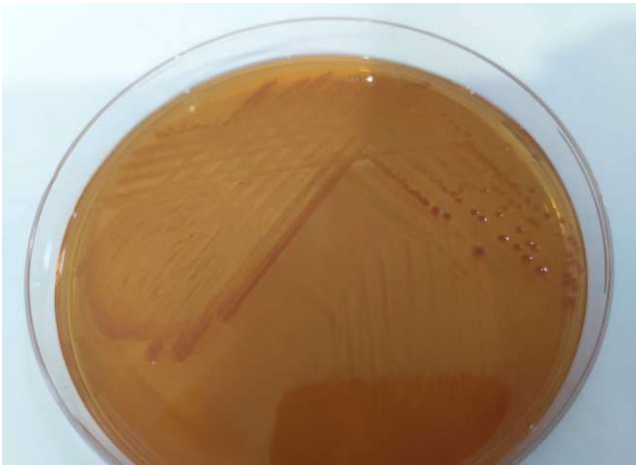

Figure 1 : Colonies of *Comamonas testosteroni* on MacConkey agar.

Figure 2 : Colonies of *Comamonas testosteroni* on Sheep blood agar.

DISCUSSION:

Comamonas testosteroni are ubiquitously found in nature and have a global distribution. Intra-abdominal infections are the commonest infections reported with this organism[8]. Most of the previously reported cases were immunocompromised due to different condition. Our case was also immunocompromised due to alcoholic chronic liver disease leading to chronic pancreatitis. *Comamonas testosteroni* is the most common species among its various species causing human infection and majority

of the patients were survived. Intra-abdominal infections are the most common infections caused by *Comamonas testosterone,* especially in individuals with predisposing conditions[9]. Bacterial translocation from gastrointestinal tract seems to play an important role in the pathogenesis caused by *Comamonas* species. *Comamonas* species are inherent and are able to survive in environment which makes it suitable candidate for chronic and mild infection[9]. In our case there was no specific source of infection identified. Immunocompromised status of the patient plays a major role in producing infection by this organism. One incidence of infection by *Comamonas testosteroni* has been reported in stool culture in elderly women with colostomy. The aim of this case report was to alert clinicians and laboratory physicians about the potential diagnosis and clinical approach of gastrointestinal infections caused by this organism.

CONCLUSION:

We reported a rare case of *Comamonas testosterone* associated with stool. This case highlights a thorough clinical and laboratory work-up that is necessary for a positive outcome.

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Conflicts of interest
There are no conflicts of interest.

REFERENCES:

1 Lipuma J, Currie B, Peacock S, Vandamme P. Burkholderia, Stenotrophomonas, Ralstonia, Cupriavidus, Pandoraea, Brevundimonas, Comamonas, Delftia, and Acidovorax; in Jorgensen J, Pfaller M, Carroll K, Funke G, Landry M, Richter S, Warnock D (Eds.): Manual of Clinical Microbiology. Vol 43, Edn.: 11. Washington, DC, ASM Press, 2015; pp:791–812.

2 Ryan MP, Adley CC, *Ralstonia* SPP. Emerging global opportunistic pathogens. Eur. J. Clin. Microbiol. Infect. Dis. 2014;33:291–304. doi: 10.1007/s10096-013-1975-9.

3 Ryan MP, Adley CC. *Sphingomonas paucimobilis*: A persistent Gram-negative nosocomial infectious organism. J. Hosp. Infect. 2010;75:153–157. doi: 10.1016/j.jhin.2010.03.007.

4 Coughlan A., Ryan M.P., Cummins NM, Towler MR. The response of *Pseudomonas aeruginosa* biofilm to the presence of a glass polyalkenoate cement formulated from a silver containing glass. J. Mater. Sci. 2011;46:285–287. doi: 10.1007/s10853-010-4945-y.

5 Ryan MP, Pembroke JT. *Brevundimonas* spp: Emerging global opportunistic pathogens. Virulence. 2018;9:480–493. doi: 10.1080/21505594. 2017. 1419 116.

6 Ryan MP, Pembroke JT. The Genus *Ochrobactrum* as major opportunistic pathogens. Microorganisms. 2020;8:1797. doi: 10.3390/microorganisms8111797.

7 Kim HJ, Lee Y, Oh K, Choi SH, Sung H, Huh JW. Septic shock due to unusual pathogens, *Comamonas testosteroni* and *Acinetobacter guillouiae* in an immune competent patient. Korean J Crit Care Med. 2015;30:180–3.

8 Reddy AK, Murthy SI, Jalali S, Gopinathan U. Post-operative endophthalmitis due to an unusual pathogen, Comamonas testosteroni. J Med Microbiol. 2009;58:374–375.

9 Arda B, Aydemir S, Yamazhan T, Hassan A, Tunger A, Serter D. Comamonas testosteroni meningitis in a patient with recurrent cholesteatoma. APMIS. 2003;111:474–476.