

Case Report

A Case of Pneumonia Caused by *Comamonas Testosteroni* in the Pediatric Intensive Care Unit

 Serife Cetin,¹  Serpil Baslarli,¹  Binnaz Celik,²  Ilhami Celik¹

¹Department of Infection Control Committee, Health Sciences University Kayseri Training and Research Hospital, Kayseri, Turkey

²Department of Pediatrics, Health Sciences University Kayseri Training and Research Hospital, Kayseri, Turkey

Abstract

Comamonas testosteroni, previously known as *Pseudomonas testosteroni*, is an aerobic, motile, nonspore-forming Gram-negative bacterium. It rarely infects humans and can commonly live in environments, such as soil, water, plants, and animals. In addition to this, it can also survive for a long period in hospital environments. The microorganism infections are often treatable in humans; thus, mortality is rare. Up to today, among all cases in the literature, only five died due to underlying diseases. We present a case of a 10-year-old male patient with cerebral palsy who was positive with *C. testosteroni* in the tracheal aspirate culture. The patient died on day 50 of hospitalization owing to the fact that his prognosis was extremely poor. In the medical literature, the patient is the second case of pneumonia.

Keywords: *Comamonas testosteroni*, health care-associated infections, pneumonia, cerebral palsy

Cite This Article: Cetin S, Baslarli S, Celik B, Celik I. A Case of Pneumonia Caused by *Comamonas Testosteroni* in the Pediatric Intensive Care Unit. *EJMO*. 2018; 2(4): 251-253

Comamonas testosteroni was re-classified and re-named as a result of the molecular studies in 1987, (previously known as *Pseudomonas testosterone*), is an aerobic, motile, nonspore forming and gram-negative organism.^[1, 2] This microorganism is frequently found in soil, water, plants, animals and animal wastes.^[3] In addition to this, it can also survive and colonize in the hospital environment for a long time such as intravenous lines, respiratory equipments, humidifiers and many tools.^[4, 5] Although *C. testosteroni* is not a human endogenous flora, it can also be rarely agent infection.^[6, 7]

In the literature, cases like cellulitis, peritonitis, endocarditis, meningitis, endophthalmitis, tenosynovitis, pneumonia, bacteremia have been reported.^[7] Our pneumonia case is highly remarkable in that the case is the first in Turkey and the second in the Worldwide. Here we present a case of a 10-year-old male patient with cerebral palsy who was positive of *Comamonas testosteroni* in the tracheal aspirate culture.

Case Report

A 10-year-old male patient was admitted to the Pediatric Intensive Care Unit with the cause of respiratory distress, malnutrition and general condition disorder. The patient had cerebral palsy and developed scoliosis, contracture and decubitus as a complication of cerebral palsy. The tracheostomy and gastrostomy were defined in the patient's physical examination, used these devices for five years and the patient was supported with long-term home mechanical ventilation.

Hypoxia, hypotension and bradycardia were determined when the patient's vital were examined and the patient was provided respiratory support by mechanical ventilator synchronized intermittent mandatory ventilation mode and fluid replacement was performed for hypotension. In addition to this, positive inotropic drug treatment was

Address for correspondence: Şerife Çetin, MD. Enfeksiyon Kontrol Bölümü, Sağlık Bilimleri Üniversitesi Kayseri Eğitim ve Araştırma Hastanesi, Kayseri, Turkey

Phone: +90 553 534 69 29 **E-mail:** srfcngz@gmail.com

Submitted Date: May 03, 2018 **Accepted Date:** May 11, 2018 **Available Online Date:** October 10, 2018

©Copyright 2018 by Eurasian Journal of Medicine and Oncology - Available online at www.ejmo.org



started due to hypotension resistance. The temperature of the patient was 36.7° C.

The microorganism was not isolated the first in culture samples; blood, urine and endotracheal aspirates. The laboratory results related to infection were a C-reactive protein of 22 mg/L (normal range 0-5), a procalcitonin of 0.18 ng/mL (normal range 0-0.05), and a leukocyte count of 7.69/mm³ (normal range 5.000-15.000). Intravenous ceftriaxone (2x750mg) and clarithromycin (2x75mg) was started as an empirical antibiotherapy.

The patient was fed parenterally until the gastrostomy was revised due to the fact that stomach contents leaked out from the gastrostomy area. Patient had subfebrile fever on the 5th day of hospitalization and laboratory results (C-reactive protein: 74.2 mg/L, Procalcitonin: 1.50 ng/mL, Leukocyte: 9.06/mm³) increased; however, microorganism was not isolated in culture samples; blood, urine and endotracheal aspirates. Therefore, ceftriaxone and clarithromycin were changed in treatment and instead amikacin (1x225mg), piperacillin-tazobactam (3x1.5 g) and vancomycin (4x150mg) was started. Because of the fact that the patient had high fever and excessively purulent mucus in tracheal aspirate content on the 13th day of hospitalization, endotracheal aspirates culture sample was sent to the lab and *Comamonas testosteroni* (105 CFU/ml) were isolated.

The microorganism was found sensitive to amikacin, imipenem, levofloxacin, meropenem, netilmicin, piperacillin, piperacillin-tazobactam, ceftazidime, cefepime, tigecycline, trimethoprim-sulfamethoxazole; and resistant to aztreonam, colistin, gentamicin, ciprofloxacin and tetracycline (Table 1).

Table 1. Isolated *Comamonas testosteroni* antibiotic resistance pattern

| | |
|-------------------------------|-----------|
| Amikacin | Sensitive |
| Aztreonam | Resistant |
| Gentamicin | Resistant |
| Imipenem | Sensitive |
| Colistin | Resistant |
| Levofloxacin | Sensitive |
| Meropenem | Sensitive |
| Netilmicin | Sensitive |
| Piperacillin | Sensitive |
| Piperacillin-Tazobactam | Sensitive |
| Ceftazidime | Sensitive |
| Cefepime | Sensitive |
| Ciprofloxacin | Resistant |
| Tetracycline | Resistant |
| Tigecycline | Sensitive |
| Trimethoprim-Sulfamethoxazole | Sensitive |

However, there was no change in antibiotherapy.

The patient's infection was getting better on the 21st day of hospitalization, and thus the microorganism was not isolated in control of endotracheal aspirates culture sample. So, antibiotherapy was ended. The patient died on the 50th day of the hospitalization because of in the fact that the prognosis of patient's was extremely bad. The laboratory results are summarised in figure 1.

Discussion

The case of bacteremia was reported for the first time in the worldwide in 19757 while the case of peritonitis and bacteremia episodes was reported for the first time in Turkey in 2007, in which the patient was treated with diagnosis of acute perforated appendicitis.^[8] *Comamonas testosteroni* was isolated the first time in respiratory secretions of patient of AIDS, only one of approximately 40 cases has been reported until today.^[9, 10] Most of the patients had underlying diseases; chronic heart disease, end-stage renal failure requiring hemodialysis, chronic liver disease, cancer or carcinoma, cerebrovascular disease, diabetes mellitus, senility, excessive alcohol consumption and drug addiction.^[11, 12] Also only five died owing to underlying diseases.^[12] The patient is the second case of pneumonia and sixth mortal case among approximately 40 cases with *Comamonas testosteroni* infection in the medical literature. The agent was isolated most frequently in blood (18 cases) and peritoneal fluid (11 cases) in culture samples.^[10] This microorganism mostly responds well to antibiotherapy and mortality due to infection is quite rare.^[10] It was usually found sensitive to amikacin, imipenem, meropenem, piperacillin, piperacillin-tazobactam, ceftazidime, cefepime and tigecycline whereas it was usually found resistant to aztreonam, tetracycline.^[3, 6, 7, 11-13] Nakipoglu et al.^[4] reported in their

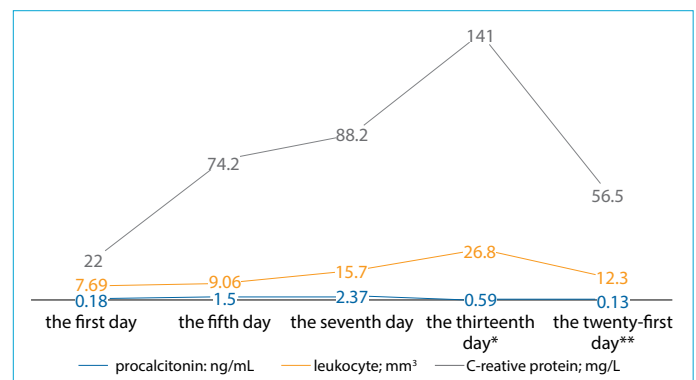


Figure 1. Procalcitonin, leukocyte and C-reactive protein chart of the patient's hospitalization.

**Comamonas testosteroni* was isolated in endotracheal aspirates culture sample.

**The patient's infection was getting better, and antibiotherapy was ended.

study that *Comamonas testosteroni* was found in water samples from oxygen humidifiers.

In conclusion, in the hospitals, especially in the intensive care units, distilled water is used for too many procedures such as to dilute the medicine, to oxygen humidify, to steam inhalation therapy, to clean the wound, to clean invasive devices (aspiration catheters, central venous catheters and peripheral venous catheters), etc. If the exposed distilled water is used for a long time, it can be agent of the infection for patients because the microorganism can easily proliferate in distilled water. Of the *Comamonas testosteroni*, which we isolated in only one case, we think that the aspiration catheter is due to the contamination of the distilled water used to decontaminate. As a result, we have decided that distilled water should be changed every eight hours. Infection control professionals should be more careful due to the risk of infection, especially with immunosuppressive patients with malignancies and chronic diseases.

Disclosures

Informed consent: Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

Authorship Contributions: Concept – S.C.; Design – S.C.; Supervision – S.C.; Materials – S.C., S.B., B.C.; Data collection &/or processing – S.C., S.B., B.C., I.C.; Analysis and/or interpretation – S.C.; Literature search – S.C., I.C.; Writing – S.C.; Critical review – S.C.

References

1. Barbaro DJ, Mackowiak PA, Barth SS, Southern PM Jr. *Pseudomonas testosteroni* infections: eighteen recent cases and a review of the literature. *Rev Infect Dis* 1987;9:124–9. [\[CrossRef\]](#)
2. Liu L, Zhu W, Cao Z, Xu B, Wang G, Luo M. High correlation between genotypes and phenotypes of environmental bacteria *Comamonas testosteroni* strains. *BMC Genomics* 2015;16:110.
3. Duran A, Abacılar AF, Uyar IS, Akpınar MB, Şahin V, Okur F, et al. *Comamonas testosteroni* endocarditis in Turkey: A case report and review of the literature. *International Medical Journal of Sifa University* 2015;2:44–7. [\[CrossRef\]](#)
4. Nakipoglu Y, Erturan Z, Buyukbaba-Boral O, Aksozek A, Aydin S, Derbentli S. Evaluation of the contaminant organisms of humidifier reservoir water and investigation of the source of contamination in a university hospital in Turkey. *Am J Infect Control* 2005;33:62–3. [\[CrossRef\]](#)
5. Cooper GR, Staples ED, Iczkowski KA, Clancy CJ. *Comamonas (Pseudomonas) testosteroni* endocarditis. *Cardiovasc Pathol* 2005;14:145–9. [\[CrossRef\]](#)
6. Bayhan Gİ, Tanır G, Karaman I, Ozkan S. *Comamonas testosteroni*: An Unusual Bacteria Associated with Acute Appendicitis. *Balkan Med J* 2013;30:447–8. [\[CrossRef\]](#)
7. Orsini J, Tam E, Hauser N, Rajayer S. Polymicrobial Bacteremia Involving *Comamonas testosteroni*. *Case Rep Med* 2014;2014:578127. [\[CrossRef\]](#)
8. Atkinson BE, Smith DL, Lockwood WR. Letter: *Pseudomonas testosteroni* septicemia. *Ann Intern Med* 1975;83:369–70.
9. Gul M, Ciragil P, Bulbuloglu E, Aral M, Alkis S, Ezberci F. *Comamonas testosteroni* bacteremia in a patient with perforated acute appendicitis. Short communication. *Acta Microbiol Immunol Hung* 2007;54:317–21. [\[CrossRef\]](#)
10. Franzetti F, Cernuschi M, Esposito R, Moroni M. *Pseudomonas* infections in patients with AIDS and AIDS-related complex. *J Intern Med* 1992;231:437–43. [\[CrossRef\]](#)
11. Pekinturk N, Akgunes A. A rare pathogen *Comamonas testosteroni*: case report and review of literature. *J Health Sci KOU* 2016;2:7–10.
12. Yasayancan N, Inonu Koseoglu H. The 20th *Comamonas Testosteroni* Bacteremia Case in the Literature from Turkey: Mortal and Polymicrobial A Case Report and Literature Review. *EJMO* 2017;1:168–71. [\[CrossRef\]](#)
13. Farooq S, Farooq R, Nahvi N. *Comamonas testosteroni*: Is It Still a Rare Human Pathogen? *Case Rep Gastroenterol* 2017;11:42–7.