

Omak, T. B., Yalçinkaya, M., & Gürol, Y. (2025). Possible emergence of *Myroides* spp. as a nosocomial pathogen: A case report from a state hospital intensive care unit. *Journal of Health Systems and Policies (JHESP)*, VII, 123-127, DOI: 10.52675/jhesp.1797831

Possible Emergence of *Myroides* spp. as a Nosocomial Pathogen: A Case Report from a State Hospital Intensive Care Unit

Tuğçe Başarı OMAK¹ 

Mehnur YALÇINKAYA² 

Yeşim GÜROL^{3*} 

ABSTRACT

Myroides spp. represent a growing challenge for clinicians, particularly in immunocompromised patients and those admitted to intensive care units. Infections caused by this genus are uncommon and have been rarely reported in clinical samples. However, *Myroides* spp. are intrinsically resistant to many antimicrobial agents; therefore, they should be considered as potential pathogens in selected clinical contexts. Here, we report a case of *Myroides* spp. isolated from a patient in the intensive care unit. Initially, it was not regarded as a true pathogen, but subsequent similar cases were identified in the same unit. These observations raise concern about the possibility of outbreaks in intensive care settings and lead us to question whether *Myroides* spp. may be an emerging nosocomial pathogen.

Keywords: Emerging Pathogen, Infection Control, Intensive Care Unit, *Myroides* spp., Urinary Tract Infection

INTRODUCTION

The genus *Myroides* currently includes 16 species. Among them, *Myroides odoratimimus*, *Myroides odoratus* (formerly *Flavibacterium odoratum*) and *Myroides injenensis* have been isolated from clinical specimens and are

¹ Sungurlu State Hospital, Department of Infectious Diseases, Çorum

² Beykoz State Hospital, Department of Anesthesiology and Reanimation, Istanbul

³ Beykoz State Hospital, Microbiology Laboratory, Istanbul

* Corresponding author: Yeşim GÜROL, dryesimg@gmail.com

considered clinically relevant (Pfaller et al., 2019). These are aerobic, yellow-pigmented, non-motile, non-fermentative, Gram-negative bacilli, typically producing a fruity odor, and they grow well at 37°C.

Infections caused by *Myroides* spp. are uncommon, although these bacteria are ubiquitous in the environment. *Myroides* spp. have been rarely isolated from various clinical samples, including urine, wound swabs and blood cultures. In the literature, urinary tract infections are reported as the most frequent clinical manifestation associated with *Myroides* spp. Over recent years, however, an increasing number of cases have been described in different clinical settings. These organisms are intrinsically resistant to many antimicrobial agents, making their management particularly challenging.

Here, we report our first *Myroides* case in the intensive care unit (ICU).

CASE

A 77-year-old woman with a history of chronic obstructive pulmonary disease (COPD) was admitted to the emergency department with dyspnea and diagnosed with hypercapnic respiratory failure. Thoracic computed tomography demonstrated traction bronchiectasis in the left lung and near-complete collapse of the affected region. The patient was intubated, and due to purulent sputum, a deep tracheal aspirate was obtained. Empirical meropenem (3 × 1 g/day IV) was initiated.

Sputum culture yielded *Pseudomonas aeruginosa*, and meropenem therapy was continued. On day 12 of treatment, colistin (300 mg loading dose, followed by 2 × 150 mg/day IV) was added because of increased sputum volume and a change in colour to green. *Acinetobacter baumannii* was subsequently isolated from a sputum culture obtained prior to colistin initiation. On day 10 of combined therapy, due to escalating vasopressor requirements suggestive of clinical deterioration, tigecycline (100 mg loading dose, then 2 × 50 mg/day IV) was added. Meropenem was discontinued on day 28, tigecycline on day 14, while colistin therapy was continued.

Later in the ICU course, increased yellowish secretion and cloudiness in the Foley catheter drainage prompted the collection of blood, sputum, and urine cultures. The blood culture grew *Candida parapsilosis*, the sputum culture yielded *A. baumannii*, and the urine culture grew *Candida albicans* together with *Myroides* spp. The *Myroides* spp. isolate was initially interpreted as colonization, and the Foley catheter was replaced.

A repeat urine culture obtained three days after catheter replacement again grew *Myroides* spp. Compared with the initial isolate, the strain had acquired resistance to trimethoprim-sulfamethoxazole, to which it had previously been

susceptible. In the absence of erythrocytes and leukocytes in the complete urinalysis and in the absence of urinary tract symptoms, this finding was evaluated as asymptomatic bacteriuria.

During follow-up, urine cultures were obtained approximately every seven days. Despite repeated catheter changes, a pan-resistant *Myroides* spp. was persistently isolated. The patient ultimately died from respiratory failure and cardiac arrest during the 11th week of ICU hospitalization.

The *Myroides* isolate was initially identified using VITEK® 2 GN ID cards (bioMérieux, Marcy l'Étoile, France). Identification as *Myroides* spp. was confirmed by matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS). Antimicrobial susceptibility testing was performed using VITEK 2 and interpreted according to the European Committee on Antimicrobial Susceptibility Testing (EUCAST) criteria.

DISCUSSION

Myroides spp. poses a significant challenge for clinicians, particularly in immunosuppressed patients, those requiring prolonged intensive care unit (ICU) stays, and individuals with indwelling urinary catheters. Distinguishing colonization from true infection is often difficult in this population. *Myroides* spp. can form biofilms and are frequently multidrug resistant, resulting in limited therapeutic options.

In catheterized patients, clinical and microbiological criteria such as fever, purulent urine, suprapubic tenderness, and recurrent positive urine cultures despite catheter replacement should be considered when differentiating infection from colonization. Consistent with previous reports, *Myroides* spp. are most often isolated in patients with long hospital stays and long-term urinary catheterization. In some cases, patients have been managed successfully with urinary catheter replacement alone (Duman et al., 2024).

Başkol et al., 2021 reported successful intravesical colistin administration in a patient with asymptomatic bacteriuria caused by *Myroides* spp., who was scheduled for a urological intervention. In contrast, in our case, *Myroides* spp. persisted in urine cultures despite tigecycline and subsequent colistin therapy and ultimately developed a pan-resistant profile.

Reports of emerging microorganisms, particularly those involved in outbreaks, are crucial to guide infection control measures and antimicrobial stewardship. Yağcı et al. (2000) described a *Myroides* outbreak in a urology ward. Ktari et al. (2012) suggested that extensive carbapenem use in Tunisian hospitals may have contributed to the emergence of pan-resistant *M.*

odoratimimus strains. An outbreak of urinary tract infections caused by *M. odoratimimus* in immunocompromised patients was reported in a Turkish hospital (Kutlu et al., 2020). Gökbulut-Bektaş et al. (2021) also reported a *Myroides* outbreak in an ICU. Collectively, these data support the concept of *Myroides* spp. as a potential emerging nosocomial pathogen, particularly in high-risk units such as ICUs and urology wards. According to a report based on a survey, approximately half of the infectious disease and clinical microbiology specialists have never seen *Myroides* spp. growth in urine culture some of the specialists may have low level of knowledge about *Myroides* spp. (Yılmaz et al., 2023).

CONCLUSION

As *Myroides* infections are not limited to the urinary tract, clinicians should consider *Myroides* spp. as a potential etiologic agent of invasive infection, particularly in cases of unexplained treatment failure. This microorganism is often regarded as non-pathogenic or of low virulence and may be overlooked until it is implicated in an outbreak or a fatal case. In patients with prolonged ICU stays and indwelling catheters, distinguishing colonization from true infection due to *Myroides* spp. can be challenging. Given the limited therapeutic options associated with multidrug resistance, heightened clinical awareness and careful clinical-microbiological correlation are essential. Systematic reporting and documentation of *Myroides* infections and outbreaks will contribute to a better understanding of this emerging pathogen and help guide both antimicrobial stewardship and infection control strategies.

Ethical Approval: Authors declare that this case report entitled “Possible Emergence of *Myroides* spp. as a Nosocomial Pathogen: A Case Report from a State Hospital Intensive Care Unit” does not require ethical approval.

Authors’ Contributions: YG conceptualized the study design. MY and TBO conducted the literature review and wrote the draft. YG contributed to the review and editing processes. MY and TBO participated in the case presentation. All authors read and approved the final version of the manuscript.

Funding and Acknowledgment: This study received no external funding.

Conflict of Interest Statement: The authors declare that they have no conflicts of interest.

REFERENCES

- Başkol, D., Kalemci, M. S., Erdem, H. A., Noyan, A., Pullukçu, H., & Taşbakan, M. I. (2021). İntravezikal kolistin uygulaması ile idrar sterilizasyonu sağlanan bir olgu deneyimi. *ANKEM Dergisi*, 35(3), 85–88. <https://doi.org/10.54962/ankemderg.1048544>
- Duman, Y., Çelik, D., Parmaksız, E. N., Ersoy, Y., & Özer, A. B. (2024). Are Myroides spp. isolated from urinary catheter cultures of patients in intensive care units an infection or colonization? Analysis of 36 cases. *Turkish Journal of Intensive Care*, 22(3), 207–211. <https://doi.org/10.4274/tybd.galenos.2023.64497>
- Gökbulut-Bektaş, Ş., Tümtürk A., Akdağ A. G., & İzdeş S. (2021). An outbreak of urinary tract infections due to Myroides spp. in adult intensive care unit: Risk factors and control procedures. *Journal of Cardio-Vascular-Thoracic Anaesthesia and Intensive Care Society*, 27(3), 210–215. <https://doi.org/10.5222/GKDAD.2021.46704>
- Ktari, S., Mnif, B., Koubaa, M., Mahjoubi, F., Jemaa, M. B., Mhiri, M. N., & Hammami, A. (2012). Nosocomial outbreak of Myroides odoratimimus urinary tract infection in a Tunisian hospital. *Journal of Hospital Infection*, 80(1), 77–81. <https://doi.org/10.1016/j.jhin.2011.09.010>
- Kutlu, H. H., Avcı, M., Dal, T., Arı, O., & Durmaz, R. (2020). A healthcare-associated outbreak of urinary tract infections due to Myroides odoratimimus. *Japanese Journal of Infectious Diseases*, 73(6), 421–426. <https://doi.org/10.7883/yoken.JJID.2019.536>
- Pfaller, M. A., Landry, M. L., & Carroll, K. C. (Eds.). (2019). *Manual of clinical microbiology*. ASM Press.
- Yağcı, A., Cerikçioğlu, N., Kaufmann, M. E., Malnick, H., Söyletir, G., Babacan, F., & Pitt, T. L. (2000). Molecular typing of Myroides odoratimimus (Flavobacterium odoratum) urinary tract infections in a Turkish hospital. *European Journal of Clinical Microbiology and Infectious Diseases*, 19(9), 731–732. <https://doi.org/10.1007/s100960070001>
- Yılmaz, E. M., Bilgin, M., & Günel, Ö. (2023). Evaluation of the approaches adopted by the infectious diseases and clinical microbiology specialists and medical microbiology specialists in the case of myroides spp. growth in urine culture: A survey study. *Black Sea Journal of Health Science*, 6(4), 584–591. <https://doi.org/10.19127/bshealthscience.1316313>