



Case Report

Myroides Spp: An Emerging Uro-pathogen in Catheterized Patient Isolated in Tertiary Care Hospital, New Delhi: A Case Report

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Abstract

Introduction: We are presenting a case report of urinary tract infection caused by an emerging pathogen (*Myroides* spp.) in an immunocompetent patient. They are low grade pathogen but can cause serious infections in immunocompromised patients. **Background:** *Myroides*spp. were traditionally classified as *Flavobacterium* spp., which are Gram negative, non-fermentative and non-motile bacteria. *Myroides* spp. are commonly present in environment, sewage, food and soil. An increasing number of infections such as urinary tract infections, sepsis and skin and soft tissue infections, caused by these microorganisms has been reported. Due to its multidrug resistant nature, it is important to correctly identify *Myroides* spp. in order to choose the best treatment regimen.**Case:** A 62yr male resident of Delhi presented to Surgery Emergency Department of our hospital with complaints of recurrent episodes of retention of urine and heaviness in lower abdominal. Patient had history of repeated catheterisation with BPH (Benign Prostate Hypertrophy). Subsequently, urine sample was inoculated on Blood Agar and MacConkey'sAgar and incubated for 24 hours at 37°C. After the incubation, a pure culture with a colony count of >100,000 CFU/ml of a non-lactose fermenting colony was identified as *Myroides* spp. The patient was successfully treated with Aztreonam after antibiotic susceptibility testing confirmed its susceptibility.**Conclusions:** This case report brings to light the importance of a newly emerging atypical multidrug resistant uro-pathogen in an immunocompetent individual.

Keywords: *Myroides* spp.;Immunocompetent; Foleys catheterization; Aztreonam;Extensively drug resistant

Introduction

*Myroides*spp was initially placed under *Flavobacterium odoratum* but later excluded from this genus by Bernardet et al., due to important genomic and phenotypic differences. They are considered as low-grade pathogen but can cause serious infections in immunocompromised patients. They are Gram-negative

bacilli, strictly aerobic, non-motile, oxidase positive with yellow pigmentation and a characteristic fruity odour.

Here we are presenting a case report of urinary tract infection (UTI) caused by this emerging pathogen in an immunocompetent patient.

Case

A 62-year man of Delhi presented to Surgery Emergency Department with heaviness in lower abdomen and recurrent

urinary retention with catheter in-situ. He was a follow up case of BPH (Benign Prostatic Hyperplasia). He first came to hospital in November 2022 with burning micturition and acute retention of urine. On examination, there was tenderness in the suprapubic area. A urinary Foley's catheter was positioned. On Ultrasonography, prostate was enlarged (grade 2) in size 38×49×45mm, vol 43cc with normal shape and echogenicity and no abnormality detected in other organs. Biopsy of Prostate showed features of BPH with chronic prostatitis and no evidence of malignancy. He was subsequently advised for TURP (Transurethral Resection of Prostate) and referred for pre anaesthetic check-up (PAC). During PAC, he was incidentally diagnosed as Hepatitis C positive. His blood counts revealed haemoglobin 11.8gm/dl, White Blood Cell count (WBC count) of 6500 /mm³, Platelet Count 1.44 lac/mm³, AEC 370, PT INR 13.7/0.9, Blood urea 26.82, S. Creatinine 0.82, S. Na/K 133/4.19, S. bilirubin 0.82, SGOT 84, SGPT 62 and SAP 73. Urine routine microscopy showed WBC count of 15-20/HPF, RBCs- 0/HPF and a positive Leukocyte Esterase test. Urine culture reported *Pseudomonas* spp sensitive to only ciprofloxacin and resistant to Imipenem, Amikacin, Gentamicin, Tobramycin, Ceftazidime. He was treated with tab Ciprofloxacin 500 mg BD for 14 days, and referred to urologist.

Subsequently, he came in December with burning micturition. Urine culture reported no growth. The catheter was reinserted and he was readvised for TURP.

The patient reported again in the mid of January with lower abdomen heaviness and urinary retention. On admission, he was afebrile with stable vitals. The indwelling catheter was replaced and urine sample was sent for culture and sensitivity.

Urine sample was inoculated on Blood agar and MacConkey's agar and incubated at 37 °C for 24hrs. After the incubation time, a pure growth with a colony count of >100,000 CFU/ml of non-lactose fermenting colony was observed. The colonies appeared round, translucent with a yellow tinge and had a fruity odour. It was catalase and oxidase positive and non-fermentative. The organism was provisionally identified as *Pseudomonas* spp but it was non-motile and thereafter subjected to MALDI-TOF which confirmed the organism as *Myroides* spp. The antibiotic susceptibility testing was done by CLSI guidelines, using Kirby Bauer disc diffusion method. The susceptibility profile was as follows: susceptible to Aztreonam, resistant to Amikacin, Gentamicin, Ceftazidime, Tobramycin, Nitrofurantoin, Ciprofloxacin. Colistin sensitivity was performed by Colistin agar dilution method and was reported as resistant. The patient improved clinically on IV Aztreonam 2 g TDS for 5 days and discharged with referral to urologist for TURP. The patient was subsequently lost to follow up.

Discussion

Myroides spp are part of normal flora and hardly known to cause infection. They are low grade opportunistic pathogens mostly affecting immunosuppressed patients. They cause UTI in patients with Foleys catheter, urinary retention, chronic nephritis, calculus and immunocompromised conditions [1]. Due to its recently emerging nature and limited data, it is being misidentified by conventional methods. With the advent of automated methods like Vitek 2 MS and MALDI-TOF mass spectrometry, there is an increase in the detection of these atypical pathogens. Thus, timely and correct identification is helpful for antimicrobial stewardship and hospital infection control.

Although UTI associated with *Myroides* spp is commonly reported in immunocompromised individuals, here we present a unique case report of this infection in an immunocompetent patient [2].

Prolonged urinary catheterisation, long term hospitalization and various underlying comorbidities serve as important risk factors for acquisition of infection by this organism. In our patient, multiple episodes of urinary retention due to BPH serves as the single most important contributing factor for this infection. Similarly, in one study reported from Romania, two patients had urological comorbidities. One had TURP for benign prostatic hyperplasia with COPD, for which he was on long-term corticosteroid treatment and was admitted for acute urinary retention. The other patient had undergone a radical cystectomy with bilateral cutaneous ureterostomy for a muscle-invasive bladder cancer [3].

Our patient has a history of repeated urinary catheterizations which may lead to formation of biofilm which serves as an important virulence factor by increasing its pathogenic potential and contributes to multi drug resistance and ultimately therapeutic failure. Biofilm formation helps it to escape host defence and their higher resistance to antibacterial agents because sessile cell express properties which are different from the properties of planktonic cells [4].

In most reported cases, *Myroides* spp have been found to be multi or pan drug resistant. In our case, the organism was also found to be extensively drug resistant and susceptible only to Aztreonam which is in concordance with the studies by Licker et al., [3]. In contrast to the above findings, a study by Romano et al., [5] demonstrated *Myroides* spp as susceptible to Ciprofloxacin and resistant to Aztreonam. Our isolate was resistant to anti-pseudomonal Cephalosporins, Ceftazidime and Colistin. The uncontrolled and excessive use of fluoroquinolones and

aminoglycosides as first line agents for complicated UTI without proper identification of the causative agent further aggravates the problem of increasing antimicrobial resistance in hospital settings.

Hence, choosing the appropriate antimicrobial treatment can be quite challenging because of the limited clinical experience with this emerging atypical uro-pathogen and further compounded by the resource limited settings in the developing countries. In our case, the infection has not been attributed to any definitive source but prolonged catheterization served as the single most important contributing risk factor for the acquisition of this uro-pathogen.

Conclusion

Although *Myroides* spp. are uncommon pathogens, clinicians should be aware of its ability to cause UTI even in the immunocompetent population. It is important to identify *Myroides* spp. infections rapidly in order to choose the best therapeutic regimen, considering the wide range of antibiotic resistance of these microorganisms.

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Author contribution:

Iram Rafique– Study design, data collection, data analysis, writing.

Sanchita Tuteja-Data analysis and writing.

Monica Chaudhary- analysis and supervision.

Rahul Lal- Supervision

Sonal Saxena- Supervision

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