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Case Report

Microbiology Section

Fatal Case of Pericardial Effusion Due to *Myroides Odoratus*: A Rare Case Report

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ABSTRACT

Myroides spp., previously known as *Flavobacterium odoratum*, are rare clinical isolates and are often considered non-pathogenic. Natural habitat includes soil, fresh and marine waters, in foods and in sewage treatment plants. We present an unusual case of fatal pericardial effusion due to *Myroides odoratus* in a patient suffering from chronic kidney disease and undergoing maintenance haemodialysis. This case is presented to show the increasing incidence of rare isolates causing localized and systemic infections and due to their high intrinsic resistance to many antibiotics they can be fatal. Thus isolation of these pathogens is of great clinical importance.

Keywords: *Flavobacterium odoratum*, Immunocompromised, *Myroides* spp., Resistance, Systemic infection

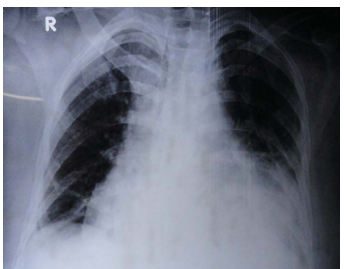
CASE REPORT

A 69-year-old male, known case of chronic kidney disease, presented with dyspnoea and chest pain associated with few episodes of high grade fever. On general examination patient was conscious and oriented. He also had pallor and pedal oedema. BP was 100/70 mmHg and pulse rate was 90/min. No significant findings were noted on systemic examination. On investigation, haemoglobin was 9.5gm% and TLC was 16700/cumm, Serum creatinine and albumin were 5.3mg/dl and 3.0 g/dl respectively. X-Ray showed diffuse cardiomegaly, with no signs of consolidation [Table/Fig-1] and on echocardiography, Left ventricular dilatation with normal LV contractibility, along with diffuse pericardial effusion was recorded. Pleuropericardial window was created and drain was put in pericardial space to drain out effusion. Pericardial fluid was then sent for ADA levels, cytological and microbiological examination. ADA level was found to be normal (22.0 U/l) and TLC was 120 cells/cubic mm (mostly polymorphs). FNAC of pericardium showed fibrocollageneous tissue with flattened pericardial lining. No granulomatous pathology was seen.

On microbiological investigation, Gram stain showed few inflammatory cells and Gram negative bacilli which on bacterial culture showed nonhaemolytic, pale yellow coloured colonies on blood agar [Table/Fig-2] and Non lactose fermenting colonies on MacConkey agar. Fungal culture of fluid was sterile after 2 weeks. In view of suspicion of Non-fermenter organism, BD Phoenix Identification panel was put up which identified the organism to be *Myroides odoratus*. Blood culture and urine culture were sterile after 5 days and 48 hours respectively. Antibiotic susceptibility of the isolate was determined by broth microdilution (BD Phoenix automated identification system) and the isolate was found to be pan resistant to all the antibiotics [Table/Fig-3]. Depending upon the microbiological culture and AST report, the patient was started on antibiotics Imipenem and Colistin after clinician's discretion. Initially patient responded but gradually he developed high grade fever, cough and expectoration by 12th day of admission and there was gradual rise in TLC. On 15th day the pericardial fluid collection was sent for bacterial culture and sensitivity testing which again yielded *Myroides odoratus* from the sample with similar sensitivity pattern as before. Patient finally succumbed to death due to cardiac arrest.

DISCUSSION

Myroides odoratus was first isolated by Stutzer et al., [1]. The genus *Myroides* comprises of two species *Myroides odoratus* and *Myroides odoratimimus*. It belongs to Family Flavobacteriaceae, the species of this genus were formerly classified as *Flavobacterium odoratum* and later re-classified based on genotypic, phenotypic data [1,2]. This is an aerobic, non- fermentative Gram-Negative bacilli, nonmotile, nonsaccharolytic, oxidase, catalase, urease, and gelatinase positive. They reduce nitrate and do not produce indole. *Myroides* species grow on most media, including MacConkey agar and colonies are yellow on blood agar and produce a fruity odour [3]. *Myroides* spp. rarely causes clinical infections and so is generally not considered pathogenic. They are not part of normal human microflora and behave as low grade pathogens, and can cause infections not only in immunocompromised but also in immunocompetent host. Deepa R et al., reported isolation of *Myroides odoratus* from sputum of an immunocompromised patient leading to pulmonary infection [4]. Another case of *Myroides odoratimimus* cellulitis following a pig bite in an immunocompetent child was reported by Sofia Maraki et al., [5]. Similarly, Benedetti P et al., also reported a case of soft tissue infection, septic shock and pneumonia due to *M. odoratimimus* in an immunocompetent male [2]. Few cases of central venous catheter blood stream infections, soft tissue infections, endocarditis and ventriculitis have also been reported due to *Myroides* spp. [5-8]. Ktari et al., reported a nosocomial outbreak of urinary tract infection caused by *Myroides odoratimimus* in the urology unit of a Tunisian hospital [9]. The present case is the first case reporting pericardial effusion caused by *Myroides odoratus*. *Myroides* spp. mainly affects immunocompromised patients such as those with diabetes, chronic obstructive pulmonary disease and patients on long term steroids. In this case, patient was on long term maintenance haemodialysis which could have been a risk factor for acquiring this rare pathogen. Till date, only two cases have been described in immunocompetent hosts [2,5].



[Table/Fig-1]: Chest X-ray showing diffuse cardiomegaly with no signs of consolidation
[Table/Fig-2]: Blood agar plate showing non-haemolytic pale yellow pigmented colonies suggestive of *Myroides* spp

Antibiotics	MIC value (ug/ml)	Interpretation (S, I, R)
Amikacin	>32	R
Gentamicin	>8	R
Imipenem	>8	R
Meropenem	>8	R
Ceftazidime	>16	R
Cefepime	>16	R
Cefoperazone-Sulbactam	>16	R
Aztreonam	>16	R
Ampicillin	>16	R
Amoxicillin-clavulanate	>16/8	R
Piperacillin-tazobactam	>64/4	R
Colistin	>2	R
Trimethoprim- sulfamethoxazole	>2/38	R
Ciprofloxacin	>2	R
Levofloxacin	>4	R

[Table/Fig-3]: Invitro susceptibility of the *Myroides odoratus* isolate
(MIC, minimum inhibitory concentration; S, susceptible; I, intermediate; R, resistant)

Identification and antibiotic susceptibility testing plays a significant role due to its multi-drug resistant nature. The present isolate showed resistance to all the antibiotics in the panel. Similarly Holmes et al., also reported these strains to be resistant to wide range of antibiotics such as β-lactams, monobactams, carbapenems and aminoglycosides [10]. Mammeri et al., has reported resistance to β-lactams mainly due to the production of chromosomally encoded metallo- β-lactamases (TUS-1 and MUS-1) [11]. Cases have been reported where clinical isolates of *Myroides* had been found to be susceptible to quinolones and trimethoprim-sulfamethoxazole and clinical cure was attained [6,7] but in our case, the isolate was pan resistant to all the antibiotics.

CONCLUSION

Infections due to *Myroides* spp. are being increasingly reported in both immunocompromised and immunocompetent hosts. To the best of our knowledge, this case is first of its kind to be reported from India. This case highlights the fact that a rare pathogen like *Myroides* spp. should be considered in differential diagnosis of septicaemia and other systemic infections, and clinicians must be aware of its pathogenic role.

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