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**CASE REPORT**

# *Pantoea species*-A Rare Cause of Central Venous Catheter Related Sepsis in Hemodialysis Patient

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## ABSTRACT

There has been a significant increase in nosocomial infections in Intensive Care Units and Oncology Department. Sepsis is a major cause of morbidity and mortality in chronic kidney disease patients. In hemodialysis patient, central venous catheter related blood stream infections are major cause for concern. Most common organisms isolated are gram positive which usually respond to antibiotics and sometimes needing catheter removal. However *Pantoea species* have been rarely reported as causative agent of CVC sepsis. Herein we report a case of *Pantoea species* causing CVC sepsis in hemodialysis patient. *J Microbiol Infect Dis 2020; 10(2):103-105.*

**Keywords:** *Pantoea, Central venous catheter, Hemodialysis*

## INTRODUCTION

Hemodialysis patient are usually dependent on central venous catheter for dialysis and its infection is a major source of systemic sepsis in them. Gram positive organisms are most commonly isolated which usually respond to antibiotics rarely needing catheter removal. *Pantoea agglomerans* is member of *Enterobacteriaceae* that inhabits plants, soil and water [1].

Septic arthritis & synovitis are the most common infection caused by *P. agglomerans* [2], but Pantoea also causes epidemic of septicaemia due to contaminated intravenous products. Cotton pledgets are continuously used by nurses and physicians in hospital which may be contaminated in many ways and *P. agglomerans* survives some steps of the autoclaving process [3]. However, *P. agglomerans* is not a frequent cause of endogenous nosocomial infections.

## CASE REPORT

A 61 year old male patient was admitted in emergency department on 17$^{th}$ September 2019 with complaints of fever, medium grade with chills since two days and decreased oral intake with decreased alertness & hypotension (80mmHg systolic). He was a known case of diabetes mellitus and hypertension with chronic kidney disease stage 5. He was initiated on hemodialysis on 27$^{th}$ August 2019 via right internal jugular central venous catheter and was continued on same catheter for hemodialysis, twice a week. In view of suspected catheter related blood stream infection, blood samples drawn from a peripheral vein as well as both lumens of catheter & sent for culture in aerobic and anaerobic blood culture bottles (BacT/Alert FA; BioMerieux, Mercy l'Etoile, France). The catheter was removed with new left internal jugular catheter inserted. He was started on injectable antibiotics- ceftazidime. Ionotropes were started (Injectable Noradrenaline-adjusted as per blood pressure). He was continued on slow low efficiency dialysis alternate day.

After a period of 1-3 days of incubation (incubator BacT/Alert/3D; BioMerieux, Mercy l'Etoile, France), aliquots of broth were routinely subcultured into 5% sheep blood agar and McConkey agar. Identification as pantoe sp. was carried out by Vitek system (bioMérieux, Marcy-l'Etoile, France). On blood agar plates yellow, pinpoint-sized and smooth-surface colonies were observed. The peripheral vein sample also showed same results, therefore a contamination of blood by the catheter should be considered.

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All isolates were consistently sensitive to cefepime, cefoperazone- sulbactum, ceftazidime, quinolones, gentamicin, doripenem, amikacin, gentamicin, cotrimoxazole while they were resistant/intermediate to amoxycillin-clavulanate and cefuroxime. His total counts showed a decreasing trend (Table1). His blood pressures improved and requirement of inotropes stopped over a span of 5 days. He was discharged in hemodynamically stable state and was on regular follow up for hemodialysis alternate days. His IV antibiotics were continued for total of 14 days. He remained asymptomatic, blood pressures were stable. His repeat blood cultures (sent after one week of completion of antibiotics) turned out to be negative.

Table 1. Laboratory values of our patient.

| Variable | 18.9.19 | 20.9.19 | 22.9.19 | 10.10.19 |
|---|---|---|---|---|
| Hemoglobin (g/dl) | 11.4 | 10.3 | 9.7 | 8.7 |
| WBC/$mm^3$ | 28,700 | 16,600 | 14,100 | 11,600 |
| Platelet count /$mm^3$ | 227,000 | 165,000 | 235,000 | 412,000 |

## DISCUSSION

From our results we conclude that Proteus sp. is able to cause CVC sepsis, however the source of these Pantoea infections remains to be investigated.

Cancer chemotherapy or central venous catheterization can be predisposing factors to cases of bacteremia due to unusual organisms [1] including Listeria, *Salmonella* and *Campylobacter*. Most of the cancer and hemodialysis patients including chronic kidney disease are immunocompromised; clinical signs in them are often subtle and misleading, sometime making it difficult to identify the source of the infection [2]. *Pantoea agglomerans* is member of *Enterobacteriaceae* that inhabits plants, soil, water; they have been reported as both commensal and pathogen of animals and humans [3]. Septic arthritis & synovitis are the most common infection caused by P. agglomerans [4], but Pantoea has been also involved in nationwide epidemic of septicaemia due to contaminated intravenous products [5], an outbreak secondary to contaminated parental nutrition [6], osteitis [7], colelithiasis [8], occupational respiratory infections and skin allergy [9], blood stream infection in an elderly person [10] and peritonitis [11].

*Pantoea sp* are clearly opportunistic pathogens rarely causing disease in otherwise healthy individuals [12]. It grows well at 4 $^0$C, is often associated with plants, and can be readily recovered from cotton [13,14]. Infections by P. agglomerans are usually associated with an identifiable exogenous source]. Therefore Pantoea sp. are often associated with outbreaks due to contaminated intravenous solutions and stored blood products as well as “cotton fever” in intravenous drug abusers [13,15]. *Pantoea spp.* have been reportedly found in samples obtained from cotton swabs, intra-arterial devices, as well as plants and plant materials [12]. Cotton pledgets are continuously used by nurses and physicians in hospital which may be contaminated in many ways. *P. agglomerans* has been reported to survive some steps of the autoclaving process [5]. However *P. agglomerans*, which is ubiquitous in nature, is not a frequent cause of endogenous nosocomial infections. Intrinsic *P. agglomerans* susceptibility to beta-lactam antibiotics [12], might account for the limited number of reports on Pantoea outbreaks.

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