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Case report

Serratia plymuthica: a true pathogen in transplant patients

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Abstract

A 50-years-old patient admitted for liver transplantation unit at Mansoura Gastroenterology Surgical Center (GISC). Following liver transplantation, the patient had an indwelling urinary catheter for 5 days, presented with fever 38.5°C and suprapubic tenderness. Urine culture was requested. Significant bacterial count 1x105CFU/ml was obtained. Automated identification of bacterial colonies was performed by the Vitek 2 system. An acceptable identification of Serratia plymuthica was reported. The isolated organism was resistant to almost all the antibiotics tested by AST-GN222 cards, except for Minocycline. The patient was treated with Minocycline, clinical resolution of the infection was obtained after 10-days treatment period.

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Introduction

Urinary tract infections caused by *serratia* species usually affect those receiving broad spectrum antibiotics or undergoing invasive procedures such as urinary catheterization or surgery. *Serratia plymuthica* is an infrequent cause of infection in human. This report describes a liver transplant patient with catheter associated urinary tract infection (CAUTI) caused by *S. plymuthica*. To our knowledge this is the first reported case of *Serratia plymuthica* in Egypt.

Patient and observation

A 50-years-old patient admitted for liver transplantation unit at Mansoura Gastroenterology Surgical Center (GISC). Following liver transplantation, the patient was transferred to Transplant Intensive Care Unit (ICU). The patient had an indwelling urinary catheter for 5 days, presented with fever 38.5°C and suprapubic tenderness. Urine examination was ordered. Urine examination revealed pus cells over 100/HPF and RBCS between 10-15/HPF. Urine culture was requested and collected using standard sterile procedures. Significant bacterial count 1x105CFU/ml was obtained. Lactose Fermenter (LF) colonies were observed on MacConkey agar. Automated identification of bacterial colonies was performed by Vitek 2 system. Vitek GN-ID cards were automatically filled with the standardized suspension, sealed, and incubated at 38.5°C, and optical density were measured by the device every 15 minutes. Final results were analyzed and reported by Vitek 2 software within 18 hours. An acceptable identification of *Serratia plymuthica* was reported with 87% probability. Antibiotic sensitivity was done by AST-GN222 cards and the following AB sensitivity profile was obtained (Table 1).

Ethical consideration: a written informed consent for publication of their clinical details was obtained from the patient.

Discussion

Serratia species have been considered as important causes of infections, especially in debilitated patients. Several studies suggest that most of the *Serratia* UTIs are caused by *S. marcescens* with a high incidence of multiple drug resistance [1]. The majority of patients with *Serratia* UTIs have a history of recent surgery or instrumentation of the urinary tract [2]. *S. plymuthica* is found in the soil and has been isolated from different types of food. In 1985, Clark and Janda first reported the isolation of *S. plymuthica* from a human specimen, when the organism was recovered from a culture from a wound culture of an 8-month-old boy [3]. The first documented case of *S. plymuthica* infection in humans occurred in 1987, S plymuthica was isolated from blood cultures and a central venous catheter tip culture from a 54-year-old patient with cirrhosis [4]. *S. plymuthica* was also reported by Carrero *et al.* in six cases. Three of them were recovered from blood cultures; two were from surgical wound exudates, and one from peritoneal fluid. Almost all the cases were nosocomial in nature since all the patients developed infection few days after admission [5].

Few sporadic cases of *S. plymuthica* were isolated from a case of chronic osteomyelitis, lower respiratory infection, three cases of nosocomial septicemia associated with central venous catheter [6-8]. Pascual *et al.* have isolated *S. plymuthica* from a patient with necrotic cellulitis, which resolved after appropriate antibiotic treatment surgical exploration and debridement [9]. Isolated cases of septic pseudarthrosis, septic shock and CAPD peritonitis were also reported [10-12]. On reviewing the previously published studies worldwide, only one case of *S.*

plymuthica causing UTIs was reported in an old patient with BPH and the isolate was susceptible to amoxicillin clavulanic acid, imipenem, cefotaxime, ceftazidime, gentamicin, amikacin, ciprofloxacin, nalidixic acid, but resistant to ampicillin [13]. On the contrary, the isolated organism in our study was resistant to almost all the antibiotics tested, except for Minocycline. The patient was treated with minocycline. Clinical resolution of the infection was obtained after 10-days treatment period.

Conclusion

In conclusion, *S. plymuthica* have been infrequently isolated from clinical specimens, however it should be kept in consideration as serious multidrug-resistant pathogen especially in immunocompromised patients.

Competing interests

The author declares no competing interest.

Authors' contributions

All the authors have read and agreed to the final manuscript.

Table

Table 1: antibiotic sensitivity by Vitek 2 AST-GN222

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Table 1: antibiotic sensitivity by Vitek 2 AST-GN222

Antibiotic	**MIC**	**Interpretation**
Ticracillin	≥ 128	Resistant
Ticracillin/Clavulinic	≥ 128	Resistant
Piperacillin	≥ 128	Resistant
Piperacillin/Tazobactam	≥ 128	Resistant
Ceftazidime	≥ 64	Resistant
Cefipime	≥ 64	Resistant
Aztreonam	≥ 64	Resistant
Imipenem	4	Resistant
Meronem	≥ 16	Resistant
Amikacin	≥ 64	Resistant
Gentamycin	≥ 16	Resistant
Tobramycin	≥ 16	Resistant
Ciprofloxacin	≥ 4	Resistant
Minocycline	8	Intermediate
Trimethoprim/Sulfamethoxazole	≥ 320	Resistant