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## Research Article

### USE OF CSE-1034(ELOREST™) IN MANAGEMENT OF COMPLICATED URINARY TRACT INFECTION DUE TO MULTI DRUG RESISTANT *KLEBSIELLA PNEUMONIAE*

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#### ABSTRACT

*Klebsiella pneumoniae* is one of the causative agents for various diseases, including urinary tract infection (UTI), pneumonia and septicemia. In the present case report, a case of 35 year old male suffering from urinary tract infection with multi drug resistant *Klebsiella pneumoniae* has been discussed. This patient was successfully treated with Elores™ (Ceftriaxone/Sulbactam/Disodium-Edetate).

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## INTRODUCTION

Complicated Urinary tract infections (cUTIs) are defined as infections characterized by presence of microbial pathogens in urinary tract of a patient with structural or functional abnormality [1]. These are one of the most common infections in human being. In patients with neurogenic lower urinary tract function prevalence of UTI is more [2]. *Klebsiella pneumoniae* is one of the causative agents in various diseases, including urinary tract infection, pneumonia and septicemia [3]. There were reports of drug-resistant *Klebsiella* outbreaks in nursing facilities [3]. Latifpour et al., in 2016 showed 64 % and 48 % prevalence of ESBL producing *Klebsiella* in nosocomial and community-acquired infections respectively [4].

*Klebsiella pneumoniae* causes 75% to 86% of total clinical *Klebsiella* infections.  $\beta$ -lactam drugs are one of the choices to treat *Klebsiella pneumoniae* infection because of aminoglycoside-modifying enzymes, macrolide esterases and efflux system. However reports of presence of extended-spectrum  $\beta$ -lactamases (ESBL) and metallo- $\beta$ -lactamases (MBL) producing strains make the use of  $\beta$ -lactam drugs difficult [3, 5].

A study by Seifi et al., in 2016, on 94 isolates of *Klebsiella pneumoniae* showed 93.6 % of isolates forming biofilms. *K. pneumoniae* isolated from urine samples had greater ability to form moderately (68.9 %) and fully (20.7 %) established biofilms [6].

Elores™ Ceftriaxone/Sulbactam/Disodium-Edetate is has potential to treat antimicrobial resistance caused by ESBL and MBL producing strains. It is an effective antibiotic for treatment of complicated UTI infections [7].

In this case report, we are presenting a case of thirty five year old male with urinary tract infection causing by multi drug resistant *Klebsiella pneumoniae* and the patient was treated successfully with Elores™ (Ceftriaxone + Sulbactam + EDTA).

#### Case Presentation

A thirty five year old male patient was admitted to our hospital with altered sensorium and fever. He was feeling drowsy and was not responding appropriately to verbal commands. This patient was a follow-up case of snake bite, hypoxia and encephalopathy. Physical examination revealed he was suffering from hypoxia, weakness and neuropathy. He was bed ridden and, diagnosed with complicated urinary tract infection and neurogenic bladder. On general examination his body temperature was 101°F, blood pressure recording showed 100/60 mmHg, heart rate 100/minute and respiratory rate of 28/minute. Chest examination revealed bilateral equal air entry. Cardiovascular examination showed to have normal S1,S2 and no murmur sound. He was suffering from dehydration, hypotension and decreased urinary output. He was conservatively managed with proton pump inhibitors (Pantoprazole 40 mg q24h), antiepileptic drugs (Phenytoin 100 mg q8h) and other supportive treatment (Paracetamol 650 mg

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sos, baclofen 10 mg q12h). Fluid replacement with intravenous fluids was given to manage fluid loss due to dehydration. Empirically imipenem/cilastatin 500 Mg/ 500 Mg was administered intravenously thrice a day. Urine sample was sent for culture and sensitivity testing.

Urine culture and susceptibility report revealed presence of *Klebsiella pneumoniae*, which was resistant to most of antibiotics as described in table 1. *Klebsiella pneumoniae* was found sensitive to colistin, tigecycline and Elores™. After two days of Imipenem/cilastatin, based on urine culture report, Elores™ 3 g as loading dose was initiated followed by 1.5 g bd for 7 days. He was discharged on request after five days of treatment. At the time of discharge, he was conscious, with equal air entry in both lungs, with no response to verbal commands.

He was advised with Elores™ 1.5 g q12h, Eptoin 100 mg q8h, Pantoprazole 40 mg q24h, Baclofen 10 mg q12h, Multivitamin tablet q24h, Calcitriol sachet 60,000 units once a week. A follow up after five days was recommended. It was observed that, after treatment with Elores™, patient gradually improved, blood counts were settled and had no pyrexia. Urine culture was also sterile indicating absence of bacterial infection.

**Table 1** Culture and susceptibility report of urine sample

Antibiotic	<i>Klebsiella pneumoniae</i>
Cefuroxime	Resistant
Ampicillin	Resistant
Tobramycin	Resistant
Piperacillin	Resistant
Gentamicin	Resistant
CefoperazoneSulbactam	Resistant
Cefepime	Resistant
Cefotaxime	Resistant
Ceftriaxone	Resistant
Cefuroxime	Resistant
Ciprofloxacin	Resistant
Meropenem	Resistant
Ertapenem	Resistant
Imipenem	Intermediate Sensitive
Elores™	Sensitive
Sensitive	Sensitive
Tigecycline	Sensitive

## DISCUSSION

Antibiotics are the preferred treatment for UTIs. In the present case multi drug resistant *Klebsiella pneumoniae* infection of urinary tract was confirmed with culture sensitivity report. Pathogen was susceptible to colistin, tigecycline and Elores™ according to culture and susceptibility report. Colistin was not used because of concerns of nephrotoxicity and neurotoxicity [8,9]. UTI is not an approved indication for tigecycline. Poor excretion (22 %) of tigecycline in urine also makes it unsuitable for use in UTI [10]. *Klebsiella pneumoniae* (ESBL+MBL) was sensitive to Elores™ in 94.1 % clinical isolates. While 11.5 % meropenem, 12.7 % in imipenem, 41.3 % in piperacillin and tazobactam and 32.5 % with cefoperazone and sulbactam, respectively [11].

In a phase III trial, clinical cure rate of Elores™ was 83.33 % and 91.3 % in UTI and lower respiratory tract infections [7]. Fever subsided, TLC counts normalized and patient got discharged.

The present case showed that Elores™ can be considered suitable antibiotic for multi-drug resistant *Klebsiella pneumoniae* infections of urinary tract.

## CONCLUSION

Based on evidences in present case study, Elores™ therapy is safe and efficacious for multi-drug resistant *Klebsiella pneumoniae* infections of urinary tract. This study shows that Elores™ therapy can be used as antibiotic in such cases.

## Conflict of Interest

Author has declared no conflict of interest.

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