ELORES TREATMENT IN PATIENT WITH URINARY TRACT INFECTION DUE TO MULTI DRUG RESISTANT *ESCHERICHIA COLI* AND SECONDARY THROMBOCYTOPENIA: A RARE CASE STUDY

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ABSTRACT

We are reporting an unusual case of urinary tract infection caused by MDR ESBL producing *E coli* and secondary thrombocytopenia. It is a rare case of infection successfully treated with Elores (Ceftriaxone + Sulbactam + Disodium edetate).

KEY WORDS: UTI, thrombocytopenia, *Escherichia coli*, Elores.

INTRODUCTION

*Escherichia coli* (*E coli*) is the most common pathogen to bacterial infections worldwide. As many as 80% of UTIs are caused by *E coli*. The global spread of Extended Spectrum β-Lactamase (ESBL) producing *E coli* narrow down the choices for treatment, as production of ESBLs is associated with co-resistance to other classes of antimicrobial agents.[1] Previous literatures demonstrate that adherence of platelets to damaged endothelium due to bacterial endotoxins or shiga toxins (STX1 and STX2) produced by *E. coli* may cause thrombocytopenia.[2] Hence, there is a dire need of introducing some new antimicrobial drug for UTI, which can tackle the multiple resistance mechanisms. Evidence from previous reports advocates that, Elores can combat resistance from ESBL producing pathogens and is an effective option for treating UTI patients.[3] In this case report, we present an unusual case of urinary tract infection caused by MDR ESBL producing *E coli* and secondary thrombocytopenia treated successfully with Elores.
Case presentation

55-year-old Indian woman was admitted to our hospital with chief complaints of fever from past seven days, breathlessness and abdominal discomfort from 2-3 days, with no previous history of hypertension, coronary artery disease, diabetes mellitus, or tuberculosis diseases. On general examination the patient was alert and oriented, but appeared unwell. She was febrile (98.6 °F) with regular pulse of 80 beats / minute, blood pressure of 120/80 mmHg, respiratory rate 18 breaths/min, chest bilateral air entry positive, CVS S1, S2 normal, CNS conscious, P/A soft and non tender with bowel sounds (BS) positive.

Blood and urine samples were sent to routine hematological, microscopic and culture sensitivity testing. Hematological investigations revealed deranged parameters with total leukocyte count: 3330/cumm (Low), and hemoglobin: 9.3 g/dL (Low), lymphocytes: 11% (Low), eosinophils: 0% (Low), haematocrit: 28.7% (Low), Red Blood Cells (RBC): 3.18X10^12/L (Low) and high neutrophils 86%, ESR (Erythrocyte Sed. rate) 49mm/hr and Thrombocytopenia: 0.33 lakh/cumm (Low). The platelet count was repeated to exclude the possibility of pseudo thrombocytopenia. Prothrombin time and partial thromboplastin time were within normal limits. Blood smears showed absence of malarial parasite. Liver function test SGOT: 136 U/L, SGPT: 116 U/L, alkaline phosphatase 318 U/L, total bilirubin 1.91 mg/dL were above the normal range, where as total protein 5.67 g/dL and albumin 2.86 mg/dL were in below the normal range. Renal profile: Low levels of serum creatinine level (0.6 mg/dL), uric acid (1.7 mg/dL), calcium (8.1 mg/dL), phosphorus (2 mg/dL) were observed. However serum sodium, potassium and chloride levels were within the normal range. Dengue serology (IgG and IgM) and WIDAL test were negative. Urine routine and microscopy was normal. Chest radiography was normal, while USG abdomen revealed bilateral pleural effusion for which chest physician opinion was taken and followed.

Based on the clinical, hematological, serological and radiological findings patient was empirically started with I.V ceftriaxone and amikacin along with 1 unit Single Donor Platelets (SDP) and other supportive measures. Culture report for urine revealed MDR ESBL producing E. coli (1X10^5 cfu/ml). However, blood culture showed negative growth for microorganisms. Identified ESBL producing E coli was resistant to amikacin, cefepime, cefoperazone/sulbactam, ceftriacone, ciprofloxacin, meropenem, ofloxacin, piperacillin/tazobactam and ertapenem, but sensitive to Colistin, Tigecycline and Elores. Considering the culture sensitivity, treatment was switched to Elores 1.5g *BID* infusion for 90
minutes. On the 5th day of admission, total leukocyte count came to normal (8000/cumm). Also liver function biochemical parameters SGOT (35 U/L) and SGPT (45 U/L) reached within normal range. On 8th day of admission the platelet count increased to 1.29 lakh/cumm. Patient gradually improved and discharged on the eight day of admission, with follow-up after seven days.

**Laboratory investigations done in the present case.**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>1st day of admission</th>
<th>2nd day of admission</th>
<th>3rd day of admission</th>
<th>4th day of admission</th>
<th>5th day of admission</th>
<th>6th day of admission</th>
<th>7th day of admission</th>
<th>8th day of admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platelet count (Lakh/cumm)</td>
<td>0.33 pm</td>
<td>0.36 am</td>
<td>0.23 pm</td>
<td>0.27 pm</td>
<td>0.33 pm</td>
<td>0.46 pm</td>
<td>0.46 pm</td>
<td>0.56 pm</td>
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<tr>
<td>Sodium (meq/L)</td>
<td>137 -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>133 -</td>
<td>- -</td>
<td>- -</td>
<td>128 -</td>
</tr>
<tr>
<td>Potassium (meq/L)</td>
<td>3.7 -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>3.6 -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>C-reactive protein (mg/L)</td>
<td>- -</td>
<td>- -</td>
<td>383.2</td>
<td>- -</td>
<td>3.6</td>
<td>- -</td>
<td>84.5</td>
<td>- -</td>
</tr>
<tr>
<td>TLC (/cumm)</td>
<td>3330 pm</td>
<td>4430 am</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>8000 -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>SGOT (U/L)</td>
<td>136 -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>35 -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>SGPT (U/L)</td>
<td>116 -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>45 -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>Serum Creatinine (mg/dL)</td>
<td>0.6 -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>0.6 -</td>
<td>- -</td>
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<td>- -</td>
</tr>
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</table>

**DISCUSSION**

UTI is the third most common infection found in India and its recommended treatment option is the use of antibiotic combinations. [4] In present case, even though the the isolated pathogen was susceptible to colistin and tigecyclin, the therapy was shifted to Elores (after culture sensitivity reports), because of the known toxicity of colistin and poor urine excretion of tigecyclin. [5,6] Elores produced 4 to 5 fold lower MIC as compared with Cefoperazone plus Sulbactam in *E coli* clinical isolates. This may be due to its proved synergistic action. [7] Previously, a Phase-III clinical trial study on Elores reported a significant clinical cure rate of 83.33% (85/102) in patients treated for UTIs. [3] In the present case we have underscored the importance of detection of Shiga toxins in urinary *E coli* strain as lack of diarrhea in the patient. [2] Platelet transfusions are frequently employed to increase the platelet count in critically ill patients. For rapid elevation of the platelet count, transfusion of random donor
platelets is appropriate. In present case for the management of thrombocytopenia, patient was administered with single donor platelets and oral prednisolone (a first line treatment in newly diagnosed patients).\(^8\) Bronchodilators (ipratropium + salbutamol) along with Budesonide nebulised solution used to alleviate the shortness of breathing, pulmonary oedema and to avoid the possibility of emphysema.\(^9\) It has also been observed that, serum sodium and potassium levels remained within the normal limits after Elores therapy. It provides evidence that serum electrolytes won’t fluctuate in ELORES treated patients. It is acknowledged that a single case study has scientific limitations. However, to our knowledge, this is the first reported case and our observations suggest that, Elores is advisable in the treatment of patient with urinary tract infection caused by MDR ESBL producing \textit{E coli} and secondary thrombocytopenia.

**CONCLUSION**

Based on the evidences in the present study, Elores therapy was deemed as the suitable safer option for the treatment of patient with UTI caused by MDR ESBL producing \textit{E coli} with secondary thrombocytopenia, and can be considered as an effective and later choice in treating UTI caused by MDR pathogens.

**REFERENCES**

6. Gupta V, Rani H, Singla N, Kaistha N, Chander J. Determination of extended-spectrum β-

