THE EFFICACY OF ULINASTATIN COMBINED WITH DEXAMETHASONE IN THE TREATMENT OF SEPsis PATIENTS

AHMED RA*1, ASHIQ A2, BATool K3

1Department of Anesthesia & Intensive Care Unit, Ch. Pervaiz Elahi Institute of Cardiology (CPEIC) Multan, Pakistan
2Department of Anesthesia, NMU & H Multan, Pakistan
3Department of Anesthesia, Medicare Hospital Multan, Pakistan
*Correspondence author email address: drilyas123@yahoo.com

Abstract: This study aims to evaluate the efficacy and application of ulinastatin combined with dexamethasone in treating sepsis. A retrospective study was conducted in Nishtar Medical Hospital from 5th July 2021 to 5th July 2022. It included 80 patients divided into Group A and Group B, with 40 patients each. In Group A, patients were included who were administered dexamethasone monotherapy. In Group B, 40 patients were administered ulinastatin combined with dexamethasone. Adverse effects, treatment efficacy and a related score of both groups were analyzed. Serum inflammatory factors were measured using ELISA. After the treatment, APACHE II scores were 17.43±5.33 and 12.48±2.42 in Groups A and B, respectively. Similarly, SOFA scores were 7.78±2.43 and 5.28±1.32 points, respectively. The adverse effects were in 13 (32.5%) patients in Group A and in 4 (10%) patients in Group B. From the results of current analysis it can be concluded that a combination of Ulinastatin and dexamethasone effectively treats sepsis.

Keywords: Sepsis, Ulinastatin, Dexamethasone

Introduction

Sepsis, the body's abnormal response to infection, leads to organ failure (Shrestha et al., 2017). The risk of functional defects and death persists even after treatment. There are reports that even all the newly developed treatments may be resisted by sepsis (Cohen et al., 2015). Dexamethasone is a glucocorticoid used for treating immunosuppressive and inflammatory diseases (Ayroldi et al., 2018). Additionally, dexamethasone inhibits inducible nitric oxide synthase synthesis, thus treating sepsis (Spanier and McDonough, 2000). According to research, the survival rate during sepsis can be improved by dexamethasone, and in sepsis-associated encephalopathy, autophagy has a regulatory role (Spanier and McDonough, 2000). Additionally, as an adjunct therapy, dexamethasone is effective in meningooccal disease and has no adverse effect (Tolaj et al., 2017). Ulinastatin is a urinary trypsin inhibitor; it decreases pro-inflammatory cytokines and mediators (Chen et al., 2009). Randomized controlled trials have proved the effectiveness of ulinastatin in reducing mortality and organ failure in sepsis patients (Yu et al., 2017). In animal models, it has diminished systemic and local inflammation, increased anti-inflammatory cytokines, inhibited lymphocyte apoptosis, and increased survival (Qiu et al., 2020). This study aims to evaluate the efficacy and application of ulinastatin combined with dexamethasone in treating sepsis.

Methodology

A retrospective was conducted in Nishtar Medical Hospital from 5th July 2021 to 5th July 2022. It included 80 patients divided into Group A and Group B. The sample size was calculated by using EPI Info 7. Group A included 40 patients (21 males and 19 females) who were administered dexamethasone. Group B also contained 40 patients (25 males and 15 females) who were helpful with ulinastatin combined with dexamethasone. Subjects diagnosed with sepsis were included in the study. Included subjects were informed about the study, and consent was taken. The study design was approved by ref# 35/43 dated 03/03/21 from the hospital's ethical committee. Subjects were excluded if they were minors or aged above 50, allergic to drugs used in the study, or had mental disorders, functional insufficiency, or malignant tumour. Subjects in Group A were administered 5 mg of dexamethasone through IV
Results

General patient characteristics in both groups did not differ significantly. Before the treatment, APACHE II scores in Group A were 22.24±9.29 and in Group B were 23.44±10.09. After the treatment, APACHE II scores in Group A were 17.39±5.33 and in Group B were 12.39±2.42. SOFA scores before treatment in Group A were 14.46±4.29, and in Group B were 15.19±3.99 points, respectively. After the treatment, SOFA scores were 7.68±2.43 and 5.28±1.32 points, respectively. Before treatment, urine volumes in Group A were 25.37±4.21 ml/h, and Group B was 26.17±4.31 ml/h, respectively. After the dose administration, corresponding urine volumes were 93.23±13.55 ml/h and 142.77±16.23 ml/h. The antibiotic use time, ICU occupancy time and mechanical ventilation time in Group A were 15.33±2.21 d, 16.36±4.23 and 14.44±3.59 d, respectively and in Group B were 12.58±1.55 d, 12.69±2.25 d, 11.35±2.53 d respectively.

Before treatment, serum tumour necrosis factor-α levels in Group A were 68.36±7.24 μg/L and in Group B were 69.08±7.22 μg/L. After treatment, levels were 37.39±6.56 μg/L in Group A, and 28.37±4.34 μg/L in Group B. Before treatment, serum interleukin-6 levels in Group A were 206.09±10.52 μg/L and 207.19±10.35 μg/L in Group B. After treatment, these decreased to 168.27±7.30 μg/L and 131.35±6.23 μg/L respectively. Before treatment, serum interleukin-10 levels in Group A were 40.52±12.53 μg/L and 41.11±12.23 μg/L in Group B. After treatment, these results were 24.46±9.55 μg/L and 16.43±8.32 μg/L. This indicates that serum inflammatory markers decreased significantly in Group B compared to Group A.

**Table 1 Comparison of Adverse Reactions in Both Groups**

<table>
<thead>
<tr>
<th>Adverse reaction</th>
<th>Group A (n=40)</th>
<th>Group B (n=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscle weakness</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Nausea</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Convulsion</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Abdominal discomfort</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Fever</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Adverse rate</strong></td>
<td>13 (32.5%)</td>
<td>4 (10%)</td>
</tr>
</tbody>
</table>

**Table 2 Comparison of Treatment Efficacy in Both Groups**

<table>
<thead>
<tr>
<th>Efficacy</th>
<th>Group A (n=40)</th>
<th>Group B (n=40)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective</td>
<td>27 (67.5%)</td>
<td>35 (87.5%)</td>
<td>0.010</td>
</tr>
<tr>
<td>Ineffective</td>
<td>13 (32.5%)</td>
<td>5 (12.5%)</td>
<td></td>
</tr>
</tbody>
</table>

Reference:
Clinical efficacy and relevant score were recorded in both groups. It was observed that efficacy and scores were better in Group B as compared to Group A. Our study has some limitations. The sample size is small. A multicenter study with a large sample size may yield more beneficial results in the efficacy of these drugs.

**Conclusion**

A combination of Ulinastatin and dexamethasone is more effective in treating sepsis than dexamethasone alone.

**Conflict of interest**

The authors declared absence of conflict of interest.

**References**


