Observe Efficacy of Lansoprazole or Omeprazole Respectively Combined With Somatostatin in Treatment of Severe Pancreatitis

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Abstract
To investigate the efficacy of lansoprazole or omeprazole respectively combined with somatostatin in treatment of severe pancreatitis. Choose our hospital treatment of 148 patients from June 2014 to December 2015 in our department with severe pancreatitis were randomly divided into observation group (lansoprazole combined somatostatin treatment 78 cases) and control group(omeprazole combined somatostatin treatment 70 cases ).The clinical efficacy, recovery time and laboratory index were compared between the two groups. There was no significant difference in curative effect between the two groups (P >0.05). In observation group, Hospitalization time, the relief time and return to normal time of abdominal pain and distension were significantly lower than those in the control group. The difference was statistically significant (P<0.05).However, the recovery time of blood and urine amylase was no significant difference between the control group and the control group (P>0.05). Lansoprazole or omeprazole combined with somatostatin in the treatment of severe acute pancreatitis were achieved satisfactory curative effect, but in the lansoprazole group have significant effect to abdominal pain relief time and hospitalization time, provides a variety of options for severe acute pancreatitis in the antisecretory drugs selection.

Key words: Lansoprazole, Omeprazole, Somatostatin, Pancreatitis

1. Introduction
Acute pancreatitis is caused by activation of pancreatic enzymes in the pancreas for various reasons, leading to digestion, hemorrhage, edema and even necrosis of pancreatic tissue itself. The incidence of acute abdomen is the third, which is a common acute abdomen. Generally, there are few complications in acute pancreatitis, but for severe pancreatitis, especially in elderly patients, the incidence of complications can reach almost 100%, not only affect the digestive system, but also may cause certain harm to the respiratory, heart, blood, kidney and nervous system [1, 2]. Therefore, correct, timely and effective treatment of severe and moderate pancreatitis is helpful to rescue patients and improve the prognosis. At present, proton pump inhibitors (PPIs) are widely used in the treatment of severe and severe pancreatitis in combination with drugs that inhibit pancreatic exocrine function. In recent years, some scholars have studied that PPIs can effectively inhibit pancreatic exocrine function in the experimental dog model of acute pancreatitis, thereby reducing pancreatic secretion [3]. In the clinical treatment of severe pancreatitis, the effect of omeprazole in inhibiting gastric acid and pancreatic juice secretion has been unanimously recognized by clinicians. However, the clinical efficacy of lansoprazole in the treatment of severe pancreatitis is rarely reported. This study selected 148 patients with moderate and severe pancreatitis who were admitted to our hospital from June 2014 to December 2015. On the basis of routine treatment, Lansoprazole combined with somatostatin and Omeprazole combined with somatostatin were used respectively, and their clinical effects were compared, so as to provide more choices in the choice of acid-suppressing drugs in the treatment program.
2. Materials and Methods

General data selected from the digestive medicine department of our hospital from June 2014 to December 2015, patients with moderate to severe pancreatitis, in line with the 2013 “Guidelines for the Diagnosis and Treatment of Acute Pancreatitis in China” diagnostic criteria. Case exclusion criteria: transfer to ICU, surgical treatment and death cases. Patients were randomly divided into observation group and control group according to the number of hospitalization. There were 35 males and 43 females in the observation group, aged 51-89 years; 36 males and 34 females in the control group, aged 54-86 years. There was no significant difference in baseline characteristics of age, sex and severity between the two groups (P > 0.05).

Both groups were treated with gastrointestinal decompression, supplementation of water and electrolyte, pain relief, anti-infection, correction of acid-base imbalance, inhibition of secretion of pancreatic and gastric juice and maintenance of organ function. On this basis, the observation group was given lansoprazole 30 mg intravenously every 12 hours, somatostatin 6 mg, 24 hours to maintain the drip; the control group was given omeprazole 40 mg intravenously every 12 hours, somatostatin 6 mg, 24 hours to maintain the drip.

Judgment and evaluation criteria for clinical efficacy: ineffective: instability of vital signs, no improvement of observed indicators, unchanged symptoms or continued aggravation; effective: stable or improved vital signs, observed indicators were restored, symptoms improved; effective: stable vital signs, observed indicators reached normal, symptoms disappeared. Record the following indicators: hospitalization time, intestinal recovery to normal time, abdominal pain and abdominal distension relief time, blood amylase recovery to normal time, urine amylase recovery to normal time; the effective rate is the percentage of the total number of effective and effective patients.

2.1. Observation Indicators

1) Clinical efficacy: To observe the blood purification effect of two groups of patients.
2) APACHE II score: Acute physiology and chronic health scores of the two groups were counted.
3) Relevant clinical indicators: The physiological indicators of the two groups were analyzed, including creatinine (Ser), C-reactive protein (CRP), oxygenation index (PaO₂/FiO₂) [4].
4) Hemodynamic stability: To observe the hemodynamic indexes of the two groups, including mean arterial pressure, central venous pressure, heart rate and central venous oxygen saturation.

Statistical methods: SPSS 19.0 software was used to express the measurement data with (x ± s), t-test was used to compare the data, and chi-square test was used to compare the difference between the two groups, P < 0.05 was used to show the difference between the two groups.

3. Results

The effective rate of the observation group and the control group was 98.57% and 97.44%, respectively. There was no significant difference between the two groups (P=0.625), as shown in Table 1.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of cases</th>
<th>Markedly effective</th>
<th>Effective</th>
<th>Invalid</th>
<th>Total Effective Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>78</td>
<td>46</td>
<td>30</td>
<td>2</td>
<td>97.44</td>
</tr>
<tr>
<td>Observation Group</td>
<td>70</td>
<td>43</td>
<td>26</td>
<td>1</td>
<td>98.57</td>
</tr>
</tbody>
</table>

Table 2. Clinical symptoms of two groups, relevant indicators return to normal time

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of cases</th>
<th>Length of stay</th>
<th>Intestinal recovery time</th>
<th>Relief time of abdominal pain and distention</th>
<th>The time when blood amylase returned to normal</th>
<th>Time for urinary amylase to return to normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>78</td>
<td>21.46±2.32</td>
<td>2.37±0.58</td>
<td>1.96±0.57</td>
<td>4.23±0.78</td>
<td>6.67±1.21</td>
</tr>
<tr>
<td>Observation Group</td>
<td>70</td>
<td>20.47±2.97</td>
<td>2.23±0.54</td>
<td>1.76±0.52</td>
<td>3.99±1.00</td>
<td>6.99±1.23</td>
</tr>
<tr>
<td>P Value</td>
<td>0.03</td>
<td>0.12</td>
<td>0.03</td>
<td>0.06</td>
<td>0.12</td>
<td></td>
</tr>
</tbody>
</table>
In terms of hospitalization time, abdominal pain and abdominal distension relief time, the observation group was significantly lower than the control group, and the difference between the two groups was statistically significant (P < 0.05). In terms of intestinal recovery to normal time, blood and urine amylase recovery to normal time, there was no significant difference between the observation group and the control group (P > 0.05), as shown in Table 2.

3.1. Comparison of APACHE II Scores between Two Groups

The APACHE II score of the observation group was significantly lower than that of the control group one week, two weeks and three weeks after the intervention (P < 0.05). See Table 3.

### Table 3. Comparison of APACHE II scores between two groups [ \( \bar{X} \pm s \) ]

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of cases</th>
<th>Before intervention</th>
<th>One week after intervention</th>
<th>Two weeks after intervention</th>
<th>Three weeks after intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation</td>
<td>50</td>
<td>17.89±3.25</td>
<td>12.26±3.14</td>
<td>10.25±2.25</td>
<td>7.15±1.34</td>
</tr>
<tr>
<td>Control</td>
<td>50</td>
<td>18.02±3.47</td>
<td>16.89±3.25</td>
<td>15.45±2.16</td>
<td>11.26±2.57</td>
</tr>
<tr>
<td>T</td>
<td>1.248</td>
<td>7.526</td>
<td>8.649</td>
<td>8.241</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>0.514</td>
<td>0.042</td>
<td>0.035</td>
<td>0.038</td>
<td></td>
</tr>
</tbody>
</table>

3.2. Comparison of Related Clinical Indicators between Two Groups

The related clinical indicators of patients were investigated. It was found that there was no significant difference between the two groups before intervention (P > 0.05). After different intervention, the Ser and CRP levels of patients in the observation group were significantly lower than those in the control group, and the PaO2/FiO2 levels were significantly higher than those in the control group, which tended to the normal level, with significant difference between the two groups (P < 0.05). See Table 4.

### Table 4. Comparisons of related clinical indicators between two groups of patients [ \( \bar{X} \pm s \) ]

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of cases</th>
<th>Ser (μmol/L) Before intervention After intervention</th>
<th>CRP (mg/L) Before intervention After intervention</th>
<th>PaO2/FiO2 Before intervention After intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation</td>
<td>50</td>
<td>387.25±10.24 After 10.25</td>
<td>145.26±6.35 After 6.35</td>
<td>297.26±5.14 After 5.14</td>
</tr>
<tr>
<td>Control</td>
<td>50</td>
<td>388.65±10.04 After 10.04</td>
<td>242.26±6.35 After 6.35</td>
<td>296.52±5.34 After 5.34</td>
</tr>
<tr>
<td>T</td>
<td>1.548</td>
<td>89.526 After 89.526</td>
<td>1.354 After 1.354</td>
<td>50.241 After 50.241</td>
</tr>
<tr>
<td>P</td>
<td>0.684</td>
<td>0.001 After 0.001</td>
<td>0.659 After 0.659</td>
<td>0.001 After 0.001</td>
</tr>
</tbody>
</table>

3.3. Comparison of Hemodynamic Parameters between Two Groups 2 Weeks after Intervention

The hemodynamics of the patients was investigated. The mean arterial pressure, central venous pressure and central venous oxygen saturation in the observation group were significantly higher than those in the control group two weeks after the intervention, and the heart rate in the observation group was significantly lower than that in the control group, with the difference between the two groups (P < 0.05). See Table 5.

### Table 5. Comparison of hemodynamic parameters between two groups 2 weeks after intervention [ \( \bar{X} \pm s \) ]

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of cases</th>
<th>Mean arterial pressure (mmHg)</th>
<th>Central venous pressure (cmH2O)</th>
<th>Heart rate (times/min)</th>
<th>Central venous blood oxygen saturation (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation</td>
<td>50</td>
<td>78.25±3.25</td>
<td>14.26±3.35</td>
<td>87.45±10.25</td>
<td>13.25±5.24</td>
</tr>
<tr>
<td>Control</td>
<td>50</td>
<td>66.52±5.48</td>
<td>10.36±2.35</td>
<td>103.54±10.24</td>
<td>10.57±3.26</td>
</tr>
<tr>
<td>T</td>
<td>10.524</td>
<td>7.326</td>
<td>13.241</td>
<td>7.154</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>0.032</td>
<td>0.042</td>
<td>0.021</td>
<td>0.044</td>
<td></td>
</tr>
</tbody>
</table>
4. Discussion

Acute pancreatitis (AP) is an acute abdomen characterized by activation of pancreatic enzymes and local inflammation of the pancreas with or without functional changes of other organs. The mild type is mainly pancreatic edema, which is self-limited and has a good prognosis. The severe type is characterized by pancreatic hemorrhage and necrosis, obvious damage to important organs and many complications. Lung injury is the earliest serious complication of severe acute pancreatitis. The clinical manifestation can be hypoxemia or even acute respiratory distress syndrome. The condition is dangerous and the mortality rate is high.

Modern studies have found that oxygen free radicals play an important role in the occurrence and development of severe acute pancreatitis. A large number of oxygen free radicals can reduce membrane stability and cause tissue damage by damaging proteins, lipids, polysaccharides and other macromolecule substances. They can also damage endothelial cells and cause capillary permeability. Sexually increased, causing microcirculation disorders, aggravating pancreas and lung injury. In recent years, antioxidant therapy has become a new idea for the treatment of acute severe pancreatitis. Rau et al. found that the change of reduced glutathione in pancreatic tissue was proportional to the levels of oxidized glutathione and malondialdehyde in the experimental acute pancreatitis model induced by bovine cholate in mice. The increase of the content of reduced glutathione in pancreatic tissue could be 5. Acute pancreatitis was induced within minutes. The use of oxygen free radical scavengers can reduce the level of glutathione and alleviate pancreatic injury. Kuklinski et al. reduced the mortality of acute pancreatitis from 34% to 1.1% after adding selenium in non-randomized experimental treatment. On the basis of these experiments, Braganza used a mixture of α-acetylcysteine, selenium and vitamin C antioxidants intravenously to treat severe acute pancreatitis, and also carried out some clinical trials in small cases with significant results.

The treatment of acute pancreatitis still lacks specific methods and is still a comprehensive treatment. Its principles are to inhibit pancreatic secretion, relieve spasm and pain, prevent and control infection, maintain water and electrolyte balance, and combine surgical treatment with western medicine treatment. Finding drugs that can change the pathophysiological process of pancreatitis has always been the goal of medical profession.

Severe and moderate pancreatitis has a high incidence in acute abdomen type. Among its pathogenic factors, alcoholism, biliary tract disease, overeating and so on is considered to be closely related. In recent years, the incidence of severe pancreatitis has been raising continuously, which poses a great threat to patients’ daily life and physical health. With the deepening of clinical research, somatostatin combined with proton pump inhibitors has been widely used and has achieved certain clinical efficacy. This study confirmed that in the control group (omeprazole + somatostatin) and observation group (lansoprazole + somatostatin) two groups of clinical efficacy comparison, both achieved satisfactory results, the control group effective rate was 97.4%, the observation group effective rate was 98.6%, there was no significant difference between the two groups (P = 0.625).

Somatostatin can not only improve the immune function of the body, but also significantly inhibit the secretion of trypsin and pancreatic juice [5, 6]. In recent years, gastric acid has been shown to be an independent risk factor for the aggravation of pancreatitis symptoms [7]. Therefore, while terminating pancreatic self-digestion and protecting pancreatic cells, it has become a consensus of more and more scholars to pay attention to inhibiting gastric acid secretion [8].

Tutunji M F and other studies suggest that lansoprazole can be converted into active substances faster than omeprazole under the condition of PH 2.0-6.0, so it has a faster inhibitory effect on acid [9-14]. The reason is that Lansoprazole and Omeprazole are different in structure. Although both of them are pyridine H +K +ATPase inhibitors, Lansoprazole has stronger lipophilicity and 30% higher bioavailability than Omeprazole because of its side chain introduction of fluorine (F3) and trifluoroethoxylate group.

In terms of acid inhibition, lansoprazole does not directly inhibit H +K +ATPase due to the structural differences between the two. Instead, lansoprazole inhibits the activity of 94% H +K +ATPase by converting the intracellular tubules of gastric parietal cells into sulfonic acid and sulfosulfonamide drugs with bioactive forms, which can be inactivated by dehydration of sulfhydryl group of H +K +ATPase, thus blocking the stomach. The last step of acid secretion is to rapidly increase the gastric pH value. It is obvious that lansoprazole has a strong and lasting acid inhibition effect, which can completely block the gastric acid secretion caused by the stimulation of gastrin, acetylcholine and histamine. This study also confirmed that the application of lansoprazole in the observation group was significantly shorter than that in the control group in the recovery time of abdominal pain and abdominal distension relief (P < 0.05) [15], and then indirectly shortened the hospitalization time of patients. The hospitalization time in the observation group was significantly shorter than that in the control group; the difference was statistically significant (P < 0.05).

In conclusion, Lansoprazole and omeprazole combined with somatostatin have achieved satisfactory results in the treatment of moderate and severe pancreatitis. There is no significant difference in intestinal recovery time, blood and urine amylase recovery time between the two groups. Lansoprazole group has significant effect on abdominal pain, abdominal distension relief time and hospitalization time, and provides acid inhibitors for moderate and severe pancreatitis. There are many choices.
References


