Octreotide and Continuous Hemofiltration versus Continuous Hemofiltration Alone in Severe Acute Pancreatitis Complicated with Acute Respiratory Distress Syndrome

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Abstract
The objective of this study was to compare effects of octreotide and continuous hemofiltration versus continuous hemofiltration alone in the treatment of severe acute pancreatitis (SAP) complicated with acute respiratory distress syndrome (ARDS). It was an experimental study carried out from April 2016 to April 2018. A total of 86 cases of SAP complicated with ARDS were randomly divided into group A and group B, with 43 cases in each group. Group A was given continuous hemofiltration alone, and group B was given continuous hemofiltration combined with octreotide. The research findings showed that serum tumor necrosis factor (TNF-α), interleukin-1 (IL-1), IL-6, IL-8, diamine oxidase (DAO), endotoxin, D-lactic acid levels and acute physiology and chronic health evaluation (APACHE II) and systemic inflammatory response syndrome (SIRS) scores of group B were lower than those of group A (all p<0.001) after treatment. There was no significant difference in mortality between two groups after 90 days of discharge (p=0.306). Compared with continuous hemofiltration alone, treatment with continuous hemofiltration plus octreotide is higher in efficiency, but did not translate into improved mortality.

Key Words: Severe acute pancreatitis, Acute respiratory distress syndrome, Continuous hemofiltration, Octreotide.
double-lumen catheter was placed in the right femoral vein or internal jugular vein cannula in the patient, and continuous hemofiltration was performed using a German Braun Diapact CRRT hemofiltration machine. The replacement solution was formulated with Port. The final ion concentration was $Na^+ = 143 \text{ mmoL/L}$, $Cl^- = 16 \text{ mmoL/L}$, $HCO_3^- = 334.9 \text{ mmoL/L}$, $Ca^{2+} = 2.07 \text{ mmoL/L}$, $Mg^{2+} = 1.56 \text{ mmoL/L}$, and $K^+ = 3.6 \text{ mmoL/L}$. All patients underwent continuous hemofiltration within 12 hours after admission to the ICU. Each treatment was continued at the bedside for a duration of 20-24 hours. The blood flow during the treatment was set at 180-200 mL/minute. The replacement solution was infused by pre-dilution method; the flow rate was 2-4 L/h; meanwhile, 250 mL of 5% sodium bicarbonate was infused at a uniform speed. The patient was treated with unfractionated heparin for anticoagulation. The first dose was 20 mg/h, and the additional dose was 3-8 mg/h. Patients in group B were given a small amount of 0.6 mg octreotide dissolved in 50 mL normal saline on the basis of less than or equal to 0.05, was considered statistically significant.

Among 86 patients, 49 (56.98%) were males and 37 (43.02%) were females; aged 28-69 years, mean age 64.51 ±2.17 years; visit time 3-45 hours, mean visit time 21.36 ±2.82 hours; respiratory rate 21-30 times/minute, mean respiratory rate 26.24 ±1.73 times/minute.

There were no significant differences in serum TNF-α, IL-1, IL-6, IL-8, DAO, endotoxin, D-lactic acid, APACHE II and SIRS scores between two groups before treatment (p=0.857, 0.947, 0.970, 0.908, 0.875, 0.877, 0.914, 0.962 and 0.936, respectively); Serum TNF-α, IL-1, IL-6, IL-8, DAO, endotoxin and D-lactic acid, APACHE II and SIRS scores in group B were lower than those in group A after treatment (all p<0.001, Table I).

There were no deaths at ICU in both groups. On the 90th day after discharge, three patients (6.98%) died in group A and one patient (2.33%) died in group B, all of whom died of multiple organ failure. There was no significant difference in mortality between the two groups after 90 days of discharge (p=0.306). This study found that patients with SAP complicated with ARDS had higher levels of serum inflammatory mediators TNF-α, IL-1, IL-6 and IL-8 before treatment. This is basically consistent with previous research reports. After further analysis, it was found that continuous hemofiltration combined with octreotide...
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Octreotide can reduce the levels of serum inflammatory factors TNF-\(\alpha\), IL-1, IL-6 and IL-8 and clear inflammatory mediators in the body more effectively than continuous hemofiltration alone. Octreotide can prevent neutrophil activation and inhibit the expansion of inflammatory mediators by inhibiting the production and release of cytokines such as TNF-\(\alpha\), IL-1, IL-6, and IL-8. Continuous hemofiltration can also remove various cytokines and inflammatory mediators in the body by adsorption/filtration through diffusion or convection. Octreotide and continuous hemofiltration can play a synergistic role, so the combined effect of the two to remove the inflammatory mediator is better than the effect of continuous hemofiltration alone.

Serum DAO, D-lactic acid and endotoxin levels can be used to assess intestinal barrier function. This study found that continuous hemofiltration combined with octreotide treatment can more effectively improve intestinal mucosal permeability, reduce endotoxia and intestinal mucosal barrier function damage compared with continuous hemofiltration treatment alone. It indicated that continuous hemofiltration combined with octreotide has a better protective effect on intestinal barrier function in SAP patients complicated with ARDS. This study found that continuous hemofiltration combined with octreotide treatment can be more effective in reducing APACHE II and SIRS scores, and thus more beneficial to the improvement of clinical symptoms and prognosis; but it did not reduce the rate of death. Considering that, it may be related to the small sample size and short clinical observation time. Thus it is necessary to further include more SAP patients complicated with ARDS and extend the clinical observation time for research.

REFERENCES