Effects of Xuebijing injection combined with ulinastatin on endotoxin and inflammatory factors in treatment of severe acute pancreatitis

Hua-Xin Xiao, Ke-Jiang Tang

Department of Gastroenterology, The People’s Hospital of Nanchuan, Chongqing, 408400

ARTICLE INFO

Objective: To investigate the effects of Xuebijing injection combined with ulinastatin on endotoxin and inflammatory factors in treatment of severe acute pancreatitis. Methods: A total of 52 patients with severe acute pancreatitis in our hospital from July 2014 to July 2015 were selected and divided into two groups: Group A (n=26) and Group B (n=26). All of the patients received conventional treatment and necessary nutrition support. Patients of Group A were treated with ulinastatin on the basis of conventional treatment and nutrition support. Patients of Group B were treated with Xuebijing injection on the basis of Group A. Before and after treatment, the levels of serum endotoxin, hs-CRP, IL-6, IL-8, IL-10 and TNF-α were detected. Results: After treatment, the levels of hs-CRP and endotoxin in two groups were lower than before treatment, and the Group B decreased more significantly than the Group A. The levels of IL-6, IL-8 and TNF-α in two groups were lower than before treatment, and the Group B decreased more than the Group A, while levels of IL-10 increased more than before treatment, and the Group B increased more than the Group A. Conclusion: Xuebijing injection combined with ulinastatin can significantly improve the clinical treatment effect through reducing serum endotoxin levels and inhibiting the release of inflammatory factors of patients with severe acute pancreatitis.

1. Introduction

Severe acute pancreatitis (SAP) is a common acute critical disease of digestive system, and its condition is dangerous and progresses rapidly, reaching 20%~50% mortality rate[1,2]. Some studies indicated that the pathological injury mechanism of SAP might include: Abnormal activation of pancreatin, generation of intestinal endotoxemia and the release of a large number of inflammatory factors, etc., thus lead to systemic inflammatory response syndrome, even cause multiple organ dysfunction syndrome[3,4]. Therefore, to inhibit and block those pathomechanism earlier have important significance for the prophylaxis and treatment of SAP. Ulinastatin can inhibit the release of trypsin activity and multiple inflammatory factors[5], while Xuebijing injection has the functions of regulating immune function, antiendotoxin, inhibiting the release of inflammatory factors and protecting vascular endothelial cell[6]. In this study, the combination of ulinastatin and Xuebijing injection was used in patients with SAP to observe its effect on serum endotoxin and inflammatory factor on the basis of conventional therapy.

2. Materials and methods

2.1. General materials

A total of 52 patients with SAP, after diagnosis and hospitalization...
Patients of two groups received early fasting, gastrointestinal decompression, fluid infusion, shock prevention and anti-infection, etc. conventional therapy and necessary nutritional support. Patients of Group A were treated with ulinastatin (Product name: Ulinastatin, specification: 5 000 IU, batch number: H19990133, Guangdong Techpool Pharmaceutical co., Ltd.) on the basis of conventional therapy, I.V. 10 0000 IU per 12 h last for 7 d. Patients of Group B were administrated with Xuebijing injection (specification: 10mL; batch number: Z20130033, Tianjin Chase Sun Pharmaceutical Co., Ltd.) on the basis of conventional and Group A therapies, I.V. 100mL per 12 h last for 7 d.

2.3. Observational index

Patients’ cubital fossa vein blood were took at 3 d and 7 d before and after treatment respectively for detecting the levels of hs-CRP, endotoxinIL-6, IL-8, IL-10 and TNF-α.

2.3. Statistical analysis

Data were analyzed by SPSS version 19.0. Measurement data were expressed by Mean ± SD, and tested by t-test. Enumeration data were expressed by percentage and tested by chi-square. P<0.05 was considered as statistical significance.

3. Results

3.1. Comparison of hs-CRP and endotoxin in patients

Before treatment, comparison of hs-CRP and endotoxin had no statistical difference in patients of Groups A and B (P>0.05). After treatment, the levels of hs-CRP and endotoxin in patients of two groups were lower than before treatment (P<0.05), while each index level in Group B decreased more significantly than the Group A (P<0.05) (Table 1).

3.2. Comparison of level of serum inflammation factor in patients

Before treatment, the comparison of levels of serum inflammatory factors IL-6, IL-8 and TNF-α in patients of Groups A and B had no statistical difference (P>0.05). After treatment, the levels of serum inflammatory factors IL-6, IL-8 and TNF-α in two groups were lower than before treatment (P<0.05), while Group B decreased more than the Group A at the same period (P<0.05). Levels of IL-10 in two groups were obviously evaluated more than before treatment (P<0.05), while the Group B evaluated more than the Group A at the same period (P<0.05)

4. Discussion

The state of SAP is very dangerous and its pathogenesis is complex. Studies suggested that the generation of a large number of intestinal endotoxemia and the over-released inflammatory factor in SAP act on organs and tissues in the body, causing many organ dysfunctions, or even death. Therefore, to decrease the level of endotoxin and inhibit the release of inflammatory factor have important significance for the prevention and control of SAP. Ulinastatin is a trypsin inhibitor, which can lower the self-digestion effect of pancreas, decrease the absorption of endotoxin, inhibit the release of inflammatory factor, and improve organ injury in patients with SAP, and it has been widely used for the salvage therapy of SAP in clinic[5]. The main components of Xuebijing injection are red peony root, rhizoma chuanxiong, salvia miltiorrhiza, flos carthami and radix angelicae sinensis, etc. which have the functions of anti-microbial, antiendotoxin, and immunoregulation, inhibit the release of body inflammatory mediator, protect vascular endothelial cell, relieve organ injury, improve mortality rate of patient[6], regulatory effect of inflammation and organ protection effect in the combination of Xuebijing injection with ulinastatin can play a significant role in the treatment of SAP. This study analyzed the effects of Xuebijing injection combined with ulinastatin on endotoxin and inflammatory factors in patients with SAP, observing its clinical therapeutic effects on SAP.

SAP leads to intestinal barrier function injury, results in intestinal endotoxemia shift into blood system of systemic circulation, causes inflammatory factor over released, and results in abnormal in monocytes function, in which the decrease in monocyte HLA-DR expression is one of the expression ways that can induce immunosuppression, and further promote the progress of disease. TNF-α is a kind of proinflammatory cytokine, which has a promoting effect on the damage progress of acute pancreatitis, trigger the cascade reaction in inflammatory factor, and it was considered as an important initial factor for promoting SAP develop toward SIRS and MODS[9,10]. Granulocyte can be induced by TNF-α to generate IL-6 and IL-8. IL-6 is an inflammatory factor in acute response stage, which can induce inflammatory reaction of the whole body, damage vascular endothelial cell, increase capillary permeability, cause pancreas continuous necrosis and other organs injury, and in turn...
accelerate the release of TNF-α, then form the vicious circle[11,12]. IL-8 is a chemotactic cytokines, which can promote chemotaxis in
inflammatory cell, and induce local inflammatory reaction in body[13]. The results of this study indicated that levels of serum endotoxin,
TNF-α, IL-6 and IL-8 in patients after treatment decreased more
significantly than before treatment, and levels of endotoxin and
inflammatory factor in patients of drug combination group decreased
more significantly than that in ulinastatin alone group. IL-10 is an anti-
inflammatory factor in patients of drug combination group decreased
significantly than before treatment, and levels of endotoxin and
IL-8, and increase the level of IL-10 in patients with SAP. It has
prominence effect, which is worth for clinical application.

References