Ulinastatin Gives Rise to an Effectual Diuresis in Oliguric Acute Renal Failure

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Dear Sir,

Ulinastatin with a molecular weight of 67,000 is a trypsin inhibitor which was purified from fresh human urine. It has a broad spectrum of enzyme activity inhibition: trypsin, chymotrypsin, elastase, etc. [1–3]. It has already been reported that ulinastatin had effectiveness in the treatment of pancreatitis and traumatic, hemor-rhagic, and endotoxic shock [4, 5].

The effects of ulinastatin on oliguric acute renal failure were assessed in this study. Five cases of oliguric acute renal failure were treated. There were 3 males and 2 females, age ranging from 58 to 78 years. The mean age was $69.0 \pm (\text{SE})4.0$ years. Serum creatinine and blood urea nitrogen levels ranged from 2.0 to 8.4 and from 71 to 121 mg/dl, respectively. The mean of serum creatinine and blood urea nitrogen levels were 5.4 ± 1.2 and 90 ± 10 mg/dl. Mean ($\pm$ SD) arterial pressure and heart rate were 88.6 ± 23.0 mm Hg and 75 ± 24 beats/min, respectively. For these 5 cases, an intravenous bolus injection of ulinastatin (20×10^4 U) in saline (2 ml) was administered [6]. Before and after the ulinastatin injection, other medications for treatment of oliguric acute renal failure were continued. Then urinary volume, blood pressure, and heart rate were measured every 1 h. Urinary volumes were corrected with transfusion volumes. The corrected urinary volumes (cUV), calculated using the equation $\text{cUV} = \text{UV} (\text{ml/h}) \times \text{transfusion volume} (\text{ml/h})$, are presented in figure 1. The cUV values were significantly higher than the values before ulinastatin injection. Furthermore, the increased cUV had been retained for at least 4 hours. On the other hand, mean arterial pressure and heart rate did not significantly change after ulinastatin injection.

1 2 3
time after treatment, h

Fig. 1. cUV in 5 cases with oliguric acute renal failure after ulinastatin injection (mean $\pm$ SE). Comparison versus values before injection of ulinastatin. * $p < 0.005$; ** $p < 0.01$; *** $p < 0.02$. Ulinastatin successfully treated oliguric acute renal failure and in 4 of these 5 cases hemodialysis could be avoided. These findings strongly suggest that ulinastatin has a remarkable diuretic effect and an efficacy with early use in oliguric acute renal failure.

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