

## Effect of Very Early Continuous Veno-venous Hemofiltration (CVVH) on the Prognosis of Sepsis : A Prospective Randomized Trial

한림대학교 의과대학 신장내과

박인일 · 구자룡 · 주민하 · 한재필 · 구현철 · 김익근 · 서장원 · 이영기 · 김수진 · 윤종우

**Background :** The failure of CVVH to improve the survival of sepsis might be due to late start of CVVH in the irreversible stage of sepsis. We undertook a prospective randomized study to evaluate the impact of very early CVVH on the prognosis of sepsis.

**Methods :** In a 30-months study period, we enrolled 102 patients ( $63 \pm 15$  yr; male, 61%) who admitted to the MICU with severe sepsis or septic shock. Patients were randomized to very early CVVH group (n=43) or control group (n=59). In the very early CVVH group, 48 hrs of CVVH (target ultrafiltration rate, 2,000 mL/hour) using Prisma (Gambro, Sweden) was started immediately after diagnosis of severe sepsis or septic shock. In the control group, management began with conventional treatment, and CVVH was started only when the patients developed ARF in the course of sepsis and if they fulfilled the following conventional criteria for dialysis; 1) refractory volume overload and oliguria, 2) severe azotemia (BUN>80 mg/dL), 3) metabolic acidosis (pH<7.2) and 4) hyperkalemia (K>6.5 meq/L). Both groups received standard treatment including appropriate antibiotics, volume trial, vasopressor and ventilatory support. At enrollment, disease severity was assessed by the Acute Physiologic and Chronic Health Evaluation (APACHE) II scoring system and the Mortality Prediction Model (MPM) II, which is measured immediately on admission (MPM 0) and refined after 24 hours (MPM 24). The primary endpoint was hospital survival at discharge.

**Results :** Survival rate in the very early CVVH group was significantly higher than in the control group (72% versus 49%,  $p < 0.05$ ). There was no difference between two groups in terms of age, sex distribution, disease severity (APACHE II, MPM 0 and MPM 24 score), prevalence of shock, oliguria, acidosis (pH<7.2) and hyperkalemia (K>6.5 meq/L). In the course of sepsis, ARF requiring dialysis by conventional criteria was developed in 24 (56%) of 43 patients in the very early CVVH group and 29 (49%) of 59 patients in the control group. The survival rate of patients with ARF, which require dialysis by conventional criteria was much higher in the very early CVVH group as compared to the control group [67% (16/24) versus 24% (7/29),  $p < 0.001$ ].

**Conclusion :** In the patients with severe sepsis or septic shock, survival was improved by very early CVVH. This result suggests that early initiation of CVVH before the development of ARF may be of major therapeutic value in the treatment of sepsis.