

## 만성 혈액투석 환자에서 혈류 속도와 사망률의 관계

가톨릭대학교 의과대학 내과학교실<sup>1</sup>, 중앙대학교 의과대학 내과학교실<sup>2</sup>, 경북대학교 의과대학 내과학교실<sup>3</sup>  
서울대학교 의과대학 내과학교실<sup>4</sup>, 연세대학교 의과대학 내과학교실<sup>5</sup>, 전남대학교 의과대학 내과학교실<sup>6</sup>

장경윤<sup>1</sup>, 김수현<sup>2</sup>, 김형욱<sup>1</sup>, 김영옥<sup>1</sup>, 진동찬<sup>1</sup>, 송호철<sup>1</sup>, 최의진<sup>1</sup>  
김용림<sup>3</sup>, 김연수<sup>4</sup>, 강신욱<sup>5</sup>, 김남호<sup>6</sup>, 양철우<sup>1</sup>, 김용균<sup>1</sup>

### Blood Flow Rate and Mortality in Chronic Hemodialysis Patients

Kyung Yoon Chang<sup>1</sup>, Su-Hyun Kim<sup>2</sup>, Hyung Wook Kim<sup>1</sup>, Young Ok Kim<sup>1</sup>, Dong Chan Jin<sup>1</sup>  
Ho Chul Song<sup>1</sup>, Euy Jin Choi<sup>1</sup>, Yong-Lim Kim<sup>3</sup>, Yon-Su Kim<sup>4</sup>  
Shin-Wook Kang<sup>5</sup>, Nam-Ho Kim<sup>6</sup>, Chul Woo Yang<sup>1</sup>, Yong Kyun Kim<sup>1</sup>

Department of Internal Medicine<sup>1</sup> College of Medicine The Catholic University of Korea Seoul Korea  
Department of Internal Medicine<sup>2</sup> College of Medicine Chung-Ang University Seoul Korea  
Department of Internal Medicine<sup>3</sup> School of Medicine Kyungpook National University Korea  
Department of Internal Medicine<sup>4</sup> College of Medicine Seoul National University Seoul Korea  
Department of Internal Medicine<sup>5</sup> College of Medicine Yonsei University Seoul Korea  
Department of Internal Medicine<sup>6</sup> Chonnam National University Medical School Korea

**Background:** Inadequacy of dialysis is associated with morbidity and mortality in chronic hemodialysis (HD) patients. Blood flow rate (BFR) is one of the important determinants of increasing dialysis dose. However, the optimal BFR is unclear. In this study, we investigated the impact of the BFR on mortality in chronic HD patients.

**Methods:** Prevalent HD patients were selected from Clinical Research Center registry for End Stage Renal Disease cohort in Korea. Patients were categorized into two groups by BFR <250 ml/min and BFR ≥250 ml/min. The primary outcome was all-cause mortality. Vascular access was major potential confounder of BFR and mortality. Therefore, we also performed subgroup analysis according to the vascular access. Cox regression analysis was used to calculate the adjusted hazard ratio (HR) of mortality.

**Results:** A total of 1,669 prevalent HD patients were included. The median follow-up period was 30 months. Kaplan-Meier analysis showed that the mortality rate was significantly higher in patients with BFR <250 ml/min than those with BFR ≥250 ml/min (p=0.024, Log-rank). The multivariate Cox proportional hazard model showed that patients with BFR <250 ml/min tended to exhibit higher mortality than those with BFR ≥250 ml/min but statistically not significant (HR 1.43, 95% CI, 0.98-2.08, p=0.062). In subgroup analysis according to the vascular access, patients with BFR <250 ml/min had significantly higher mortality than those with BFR ≥250 ml/min after adjustment for clinical variables in subgroup with arteriovenous fistula (HR 1.81, 95% CI, 1.15-2.84, p=0.010), while mortality was not significant different between patient with BFR <250 ml/min and BFR ≥250 ml/min in subgroup with arteriovenous graft (HR 0.70, 95% CI, 0.26-1.84, p=0.466) or subgroup with catheter (HR 1.32, 95% CI, 0.48-3.66, p=0.595).

**Conclusions:** Our data showed that elevated BFR < 250 ml/min is associated with increased mortality in chronic HD patients, especially in patients with AVF.

**Key Words:** 사망률, 혈액 투석, 혈류속도

Mortality, Hemodialysis, Blood flow rate