

Abstract Type : Oral

Abstract Submission No. : OR-1140

Long-term particulate matter exposure increases the mortality risk of patients with end-stage renal disease

Jiyun Jung¹, Jae Yoon Park³, Yong Chul Kim², Yon Su Kim², Jung Pyo Lee², Ho Kim¹

¹Department of Biostatistics and Epidemiology, Seoul National University School of Public Health, Korea, Republic of

²Department of Internal Medicine-Nephrology, Seoul National University College of Medicine, Korea, Republic of

³Department of Internal Medicine-Nephrology, Dongguk University Ilsan Hospital, Korea, Republic of

Objectives: Aerodynamic particulate matter (PM) significantly worsens morbidity and mortality in various diseases, especially in cardiovascular and pulmonary diseases. However, little is known for relationship between PM and mortality of end-stage renal disease (ESRD).

Methods: 5041 patients who began dialysis from August 2008 to February 2015 were prospectively enrolled in the Clinical Research Center for End-Stage Renal Disease cohort study. We assigned daily mean concentration of PM < 10 µm in aerodynamic diameter (PM₁₀) to each participants for provincial-level divisions (si-do) by the location of station. Time-varying Cox proportional hazard models were used to investigate the relationship between PM₁₀ and mortality of ESRD patients who have received dialysis. Stratified analysis was also conducted by potential confounders such as age, sex, smoking status, education, insurance, marital status, and social and familial support.

Results: During the follow-up period (mean 4.18 years), 1475 deaths occurred among 5041 participants. We found non-linear relationship between PM₁₀ and mortality. Based on a threshold level at 44.15µg/m³, although lower PM₁₀ group had higher HRs for mortality with decrease in PM₁₀ (HR 0.71, CI 0.69-0.74), higher PM₁₀ group had higher HRs with increase in PM₁₀ (HR 1.25, CI 1.22-1.28). Those who married and highly educated were at high risk in both groups, but opposite tendency was shown in each groups when stratified by population density, family and social support and the number of hospitals.

Conclusions: We found that the mortality of ESRD patients has contrary effects based on a threshold level of PM₁₀. It may be caused by toxicity of PM and characteristics of behavior at the region with relatively low concentration of PM₁₀.