

Persistent Elevation of C-reactive Protein May Predict Cardiac Hypertrophy and Dysfunction in Patients Maintained on Hemodialysis

*Our Lady of Mercy Hospital, Department of Internal Medicine,
The Catholic University of Korea, Korea*

Byung-Soo Kim · Seung Hun Lee[†] · Doo Soo Jeon[†] · Chang Gyun Kim[†] · Young Ok Kim[†]
Ho Cheol Song[†] · Suk Young Kim[†] · Eui Jin Choi[†] · Yoon Sik Chang[†] · Byung Kee Bang[†]

Background : C-reactive protein (CRP), which reflects chronic inflammation, is a strong predictor of cardiovascular mortality in hemodialysis patients. We investigated whether persistent elevation of CRP has an effect on cardiac function and morphology in patients maintained on hemodialysis.

Methods : Pre-dialysis hs-CRP (high sensitivity CRP) was measured twice at an interval of 3 weeks in 52 stable hemodialysis patients, and echocardiographic studies were performed.

Results : 25 patients showed persistent elevation of pre-dialysis hs-CRP (>3 mg/L, high CRP group). Patients in the high CRP group had a lower dialysis dose ($p<0.01$), higher troponin T ($p<0.01$), and higher fibrinogen ($p<0.01$). Echocardiographic studies showed that left atrium (LA, $p<0.05$), interventricular septal thickness (IVST, $p<0.05$), left ventricular end-diastolic volume (LVEDV, $p<0.05$), and left ventricular mass index (LVMI, $p<0.05$) were higher in the high CRP group. However the ejection fraction (EF) was lower in the high CRP group ($p<0.05$), which also contained more patients with low EF (<55%) ($p<0.01$). There was no difference in DM, acute infection and type of vascular access between the groups. Hs-CRP level was positively correlated with troponin-T ($r=0.416$, $p<0.01$) and fibrinogen ($r=0.560$, $p<0.001$), and IVST with hs-CRP level ($r=0.291$, $p<0.05$), whereas the ejection fraction was negatively correlated with hs-CRP ($r=-0.301$, $p<0.05$). In addition, the high CRP group correlated positively with IVST ($r=0.281$, $p<0.05$), LVEDV ($r=0.322$, $p<0.05$), and LVMI ($r=0.312$, $p<0.05$) and negatively with EF ($r=-0.311$, $p<0.05$). On multivariate analysis, the high CRP group ($b=-0.312$, $b=0.238$, and $b=0.318$, respectively) was a significant predictor of EF ($R=0.62$, $p=0.025$), LVMI ($R=0.928$, $p=0.02$) and IVST ($R=0.64$, $p=0.01$).

Conclusion : Persistent elevation of CRP, which is an independent risk factor for EF, LVMI and IVST, may predict cardiac hypertrophy and dysfunction in patients maintained on hemodialysis.