Fibroblast growth factor 23 can predict the progress of aortic artery calcification in dialysis patients

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Objective To investigate the factors associated with progress of aortic artery calcification in maintenance haemodialysis (MHD) patients and to determine whether plasma FGF-23 level is related to progress of aortic artery calcification.

Methods MHD patients from Ruijin Hospital from July 1st 2011 to July 31th 2011 were involved in our study, following the criteria: age over 18 years old, dialysis vintage over 3 months, regular dialysis treatment and no acute renal failure. Follow up 36 months. Aortic artery calcification (AAC) was detected by a lateral lumbar X-ray plain and read by two radiologists using a semi-quantitative score. Plasma FGF-23 level measured using a C-terminal assay.

Results 120 MHD patients were enrolled in the study in July 2011, followed up for 36 months. To July 2014, a total of 67 MHD patients finished the study. Among 67 patients, 32 were male, mean age 53.9±13.1 years old, mean dialysis vintage 44.1±38.1 months, median plasma fibroblast growth factor 23 (FGF23) 48052 (11372-35750.4) Ru/ml, LgFGF23 3.79±0.83. In July 2011, 53.7% of patients had visible calcification in the abdominal aorta and mean involved segment was 1.42 with mean AACS 3.96. In July 2014, 73.1% of patients had AAC and mean involved segment was 2.34 with mean AACS 10.7. There is significant difference between two AAC involved segments and AAC scores (both $P < 0.001$). Age, dialysis vintage and FGF23 level had significant difference between AAC progress group and no AAC progress group (P value was 0.007, < 0.001 and 0.020 , separately). Logistic analysis showed that the independent parameters associated with AAC progress were age (OR=1.114 , CI 1.045-1.186) and Lg FGF23 (OR=3.848, CI 1.429-10.346) ($P < 0.001$).

Conclusion The severity of vascular calcification progress yearly in maintain heamodialysis patients. Age and FGF23 are independently associated with the progress of AAC. FGF23 level of MHD patients can predict the progress of AAC.

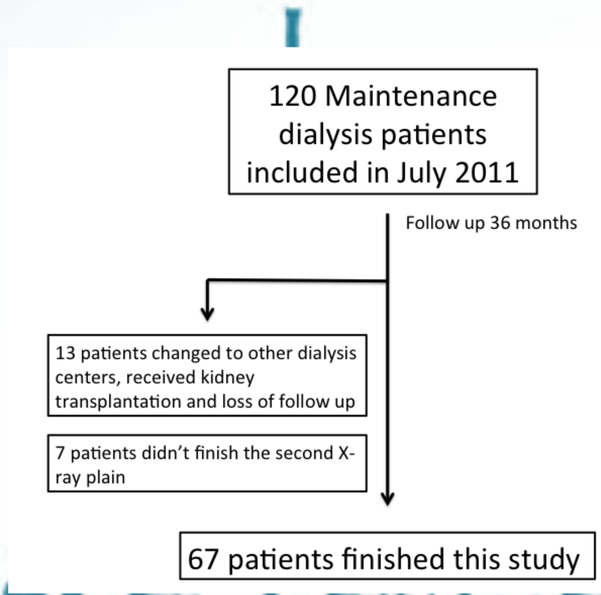

Fig. Study Flow Diagram

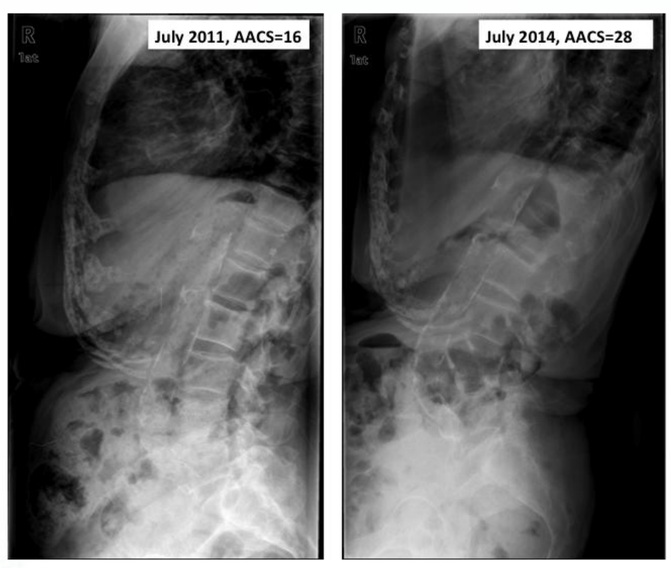

Fig. 67-yr-old male patient with 46.3 mongths on dialysis

Fig. 52-yr-old female patient with 69.8 mongths on dialysis

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