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Fibrosis-4(FIB-4) Index is Associated with Mortality and Nonfatal Cardiovascular Events in End-Stage Kidney Disease Patients Starting Maintenance Dialysis

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Objectives: CKD and ESKD are known risk factors of heart failure(HF). And liver dysfunction as congestive hepatopathy due to HF is also common. Recent studies report that Fibrosis-4(FIB4) index($\text{age} \times \text{AST}(\text{IU/L}) / \text{platelet count}(103/\mu\text{L}) \times \text{square root of ALT}(\text{IU/L})$), which was known to be useful tool for evaluating liver stiffness, can be prognostic factor of HF. Therefore, this study investigated whether FIB4 index may predict mortality and cardiovascular events(CVE) in patients with ESKD starting dialysis.

Methods: This was a retrospective cohort study including 388 patients who started dialysis at a single center. FIB4 index at dialysis initiation was calculated. Patients were stratified into three groups according to FIB4 index(<1.45:low, 1.45~3.25:intermediate, >3.25: high). The association between FIB4 index and event free survival rates for all-cause mortality and non-fatal CVE was analyzed. In addition, the association between FIB4 index and echocardiographic findings was analyzed.

Results: During a median follow-up duration of 40.0(0.03-142.3) months, 84 deaths(21.6%) and 83 non-fatal CVE(21.4%) occurred. Event free survival rates were lower in high-FIB4 group, compared with those in low-FIB4 group($p=0.001$) and intermediate-FIB4 group($p=0.005$), respectively. In Cox proportional hazard model, the high FIB4 index was independently associated with event free survival rates(HR, 2.21; 95% CI, 1.17-4.18; $p=0.015$). When comparing echo findings, only left atrial diameter(LAD) showed difference among groups($p=0.033$). However, there was no significant correlation between LAD and FIB4 index.

Conclusions: In conclusion, FIB4 index is associated with event free survival rates for all cause mortality and non-fatal CVE in ESKD patients starting dialysis.

Cox proportional hazard model


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Cox proportional hazard model of event free survival in ESKD patients who started maintenance				
	Unadjusted model		Adjusted model	
	HR(95% CI)	P-value	HR(95% CI)	P-value
FIB4 trial		0.003		0.027
Low vs interdediate	1.166(0.81-1.68)	0.411	1.053(0.64-1.73)	0.838
Low vs high	2.351(1.43-3.86)	0.001	2.21(1.17-4.18)	0.015

Kaplan-meier analysis of event free survival

