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# 신장이식 후 2년째 장기 신기능을 예측하는 바이오마커로서 소변내 liver-type fatty acid-binding protein (L-FABP) 의 유용성

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# Urine Liver-type Fatty Acid-binding Protein (L-FABP) Predicts Graft Outcome Up to 2 Year after Kidney Transplantation

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**Background:** In kidney transplant (KT) recipient, several new biomarkers have been investigated for predicting early tubular injury and our recent study identified day 2 urinary neutrophil gelatinase associated lipocalin (NGAL) to be useful in predicting slow graft function and adverse 1-year outcome. Here in this study, we further investigated the value of urinary NGAL and liver type fatty acid binding protein (L-FABP) in predicting long term graft outcome up to 2 years.

**Methods:** This was a single-center, prospective observational study. Serial urinary NGAL and L-FABP levels at 0 hrs, 2 days and 6 days after KT were measured and the clinical outcomes including acute allograft rejection, proteinuria and estimated glomerular filtration rate (eGFR) were collected during the 2-year period after KT.

**Results:** Of the 69 patients investigated, 14 and 7 experienced slow and delayed graft function (SGF and DGF), and urinary NGAL on day 2 after KT was significantly associated with SGF and DGF development, but L-FABP was not. During the 2-year follow up period, 13 (18.8%), 4 (5.8%) and 1 (1.4%) were diagnosed with acute T-cell mediated rejection, acute antibody mediated rejection (AMR) and chronic AMR, respectively. In addition, 10 (6.9%) developed calcineurin inhibitor toxicity and 6 (8.7%) developed BK viremia. The mean eGFRs at 1 and 2 years after KT were 65.1±19.1 and 58.5±22.6 ml/min/1.73m$^2$. When poor long-term graft outcome was defined as eGFR at 2 year less than 50 mL/min/1.73 m2, elderly donor, AR and higher level of urinary L-FABP at 0hr were found to be significant risk factors. Furthermore, among the patients who did not develop AR, L-FABP showed more strong association with 2-year poor graft function (p=0.006). In the multivariate logistic regression analysis, higher L-FABP at 0 hr (p=0.015) as well as acute rejection (p=0.006) was also independent factor for predicting poor long-term graft function and ROC analysis showed that area under the curve (AUC) of urinary L-FABP was 0.692 (CI 0.509- 0.876, p=0.036).

**Conclusions:** Our results demonstrate the possibility that urinary L-FABP might be useful in predicting adverse longterm outcome in KT patients.

**Key Words:** 신장이식, 바이오마커, 만성 이식신 기능장애
Kidney transplantation, Biomarker, Chronic allograft nephropathy