Abstract Type : Oral presentation
Abstract Submission No.: A-0507
Abstract Topic : Interventional Nephrology

Predictors of Arteriovenous Fistulas After Ultrasound-Guided Percutaneous Renal Biopsy

Yebin Pyo[1], Jeong Geon Lee[1], Jeong Hun Kim[1], Chae Eun Moon[1], Seung Soo Kim[2], Dong Seop Kim[3], Nam-Jun Cho[3], Samel Park[3], Hyo-Wook Gil[3], Eun Young Lee[3]
[1]Department of Medicine, Soonchunhyang University College of Medicine, Korea, Republic of
[2]Department of Radiology, Soonchunhyang University Cheonan Hospital, Korea, Republic of
[3]Department of Internal Medicine-Nephrology, Soonchunhyang University Cheonan Hospital, Korea, Republic of

Objectives : Arteriovenous fistula (AVF) is a rare complication following renal biopsy, with incidence rates ranging from 0.4% to 16.67%. While most AVFs resolve spontaneously within two years, some can lead to life-threatening hemorrhage without proper intervention. The underlying mechanisms and risk factors associated with AVF formation following renal biopsy remain unclear. This study aimed to identify predictors of post-renal biopsy AVF formation.
Methods : We conducted a retrospective review of 1,087 ultrasound-guided percutaneous renal biopsies carried out from July 2006 to December 2019. Potential risk factors, including underlying diseases and laboratory parameters, were collected. Ultrasonography performed 24 hours after renal biopsy was used to confirm AVF or other complications.
Results : The incidence of post-renal biopsy AVF was 3.53% and major complications was 1.02%. Compared to the control group, the AVF group showed significantly higher serum creatinine, urine protein-to-creatinine ratio, systolic blood pressure, activated partial thromboplastin time (aPTT), monocyte levels, and complement hemolytic activity (CH50). They also had higher rates of diabetes, hypertension, severe tubular atrophy, and severe interstitial fibrosis. Conversely, the AVF group had significantly lower height, estimated glomerular filtration rate (eGFR), and pre-biopsy hemoglobin and hematocrit levels. Logistic regression analysis identified female sex (OR=2.005, p=0.048), eGFR <60 (ml/min/1.73 m^2) (OR=3.228, p=0.001), aPTT >40 (sec) (OR=2.910, p=0.061), CH50 >90 (U/ml) (OR=5.203, p<0.001), monocyte >8(%) (OR=2.231, p=0.026) as predictors of post-biopsy AVF formation. The regression model demonstrated high predictive accuracy with an area under the receiver operating characteristic curve of 0.787.
Conclusions : Patients with impaired renal function, female sex, elevated monocyte levels and CH50 are at increased risk for post-renal biopsy AVF formation. The developed logistic regression model offers a promising tool for predicting AVF formation, potentially improving patient selection for renal biopsies and enabling the provision of intensive monitoring for high-risk patients after biopsy.