



<b>SS01</b>	<b>Scientific Session 1</b>
<b>09:20-10:50</b>	<b>GBR 102</b>
<b>Chairperson(s):</b>	
Young Sup Shim (Gachon University Gil Medical Center, Korea)	
Jung Jae Park (Chungnam National University Hospital, Korea)	

## 09:40-09:50 (SS01-P3)

### Predicting Renal Allograft Dysfunction Using Shear-Wave Dispersion Slope

Taek Min Kim<sup>1</sup>, Jeong Yeon Cho<sup>1</sup>, Sang Youn Kim<sup>1</sup>

<sup>1</sup>Department of Radiology, Seoul National University Hospital, Korea

**PURPOSE:** To evaluate the role of shear-wave dispersion slope for predicting renal allograft dysfunction.

**MATERIALS AND METHODS:** We retrospectively reviewed 126 kidney transplant recipients (median age 57 years [interquartile range 47-62 years], 60 women) who underwent percutaneous kidney biopsy for allograft evaluation from November 2022 to February 2023. All patients underwent shear-wave elastography (SWE) examination just before biopsy, and parenchymal stiffness and dispersion slope were obtained in cortex. To reduce subject-to-subject variations, we performed SWE in renal sinus fat for reference tissue. Clinical and pathologic factors related to renal stiffness and dispersion slope were evaluated by multivariable linear regression analysis. We conducted univariate and multivariate analysis to predict acute rejection using imaging parameters. Diagnostic performance of significant parameters in detecting acute rejection was evaluated by area under the receiver operating curve (AUC) values.

**RESULTS:** Acute rejection was found in 31 out of 126 (24.6%) of the patients. The median cortex-to-sinus stiffness ratio (SR) did not differ between the patients with acute rejection and without rejection (1.21 vs. 1.20,  $P=0.47$ ), while median cortex-to-sinus dispersion slope ratio (DSR) was higher in patients with acute rejection than in those without rejection (1.4 vs. 1.21,  $P<0.01$ ). Grade of interstitial fibrosis and tubular atrophy (IFTA) was the only determinant factor for both SR (coefficient, 0.13 per grade;  $P<0.01$ ) and DSR (coefficient, 0.10 per grade,  $P=0.01$ ). In multivariate analysis, mean resistive index (OR 1.06, 95% CI 1.02-1.15,  $P<0.01$ ) and DSR (OR 18.3, 95% CI 3.3-101.6,  $P<0.001$ ) were independent factors for predicting acute rejection. The AUC of resistive index, DSR, and combined two parameters were 0.64, 0.68, and 0.74, respectively.

**CONCLUSION:** Shear-wave dispersion slope obtained at SWE may be helpful for identifying renal allograft dysfunction.