

NONINVASIVE ASSESSMENT OF RENAL FIBROSIS BY SHEAR WAVE ELASTOGRAPHY

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OBJECTIVES

Renal fibrosis is an important risk factor for the progression of chronic kidney disease. Shear wave elastography (SWE) is a novel noninvasive technique to evaluate tissue fibrosis. The aim of our study was to investigate the usefulness of SWE for the assessment of renal fibrosis in kidney biopsies.

METHODS

Patients hospitalized in our nephrology clinic and who underwent renal biopsy between February 2012-June 2014 were recruited to the study. Patient demographic, clinical and laboratory data were obtained from the patients' file. The elastographic study was performed with sonoelastographic device using 4 mhz transducer SSI(Aixplorer; SuperSonic Imagine, Les Jardins de la Duranne, Aix en Provence, France) before kidney biopsy. Signals from the inferior pole of the kidney cortex using a shear wave elastography was evaluated according to color scale in Tsukuba score and expressed as kilopascal (kPa). Biopsies of patients were evaluated by the same pathologist who is specialized in Nephropathology. Patients were grouped according to presence or absence of fibrosis in kidney biopsy. SWE findings were compared in these groups

Table 1. Demographic characteristics and Laboratory Data of the Patients

	Patients (n=59)
Gender (male, %)	44.6
Age (years)	41,86±13.65
Urea (mg/dl)	44.38±27.15
Creatinine (mg/dl)	1.26±1.15
GFR (ml/dk)	92.42±51.09
Proteinuria (mg/gün)	3144.1±3191.7

Table 2. Comparison of Patients With and Without Kidney Fibrosis on Biopsy (NS: Non Significant)

	Fibrosis present (n=6)	Fibrosis absent (n=50)	p
Urea (mg/dl)	46.5±32.0	44.1±26.8	NS
Creatinine (mg/dl)	1.61±1.82	1.22±1.06	NS
GFR (ml/dk)	87.3±40.1	93.0±52.5	NS
Proteinuria (mg/day)	3456±3044	3166±3245	NS
Elastography Transverse (kPa)	12.83±9.80	7.76±5.16	0.046
Elastography Sagittal (kPa)	12.00±8.29	9.41±6.18	NS

RESULTS

Fifty six patients were included the study. The demographic characteristics and laboratory data for the patients are shown in Table 1. The elastographic measurements was significantly higher in patients with fibrosis in kidney biopsies (p=0.046). The elastographic measurements showed no significant relation with urea, creatinine, GFR and proteinuria (Table 2).

CONCLUSIONS

In this study a significant relation is found between fibrosis in pathologic investigation and elastographic measurements. This method seems to be a valuable method for the detection of the status of the renal fibrosis.

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