

### **Feasibility of Sound Touch Elastography Technique to Detect Fibrosis in Chronic Kidney Disease**

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Ultrasound (US) Elastography is a technique that uses low-frequency vibrations to measure the stiffness of the tissues. Liver elastography has shown the appropriability of detecting liver fibrosis which is considered to be the first stage of many liver diseases including cirrhosis. Chronic Kidney Disease (CKD) is known as one of the highly prevalent non-communicable diseases in most of the world including Sri Lanka. Fibrosis in the kidney is the common pathway in CKD progression. Currently, the diagnosis of CKD is mainly carried out by blood tests and biopsies. We have assessed the feasibility of detecting renal fibrosis using the clinically available Sound Touch Elastography (STE) technique. STE has been used to diagnose liver diseases in past studies. CKD (n=65) patients who visited the routine clinic and who had undergone renal biopsies were recruited to the study with their consent and institutional ethical clearance. An age-matched ( $p > 0.05$ , mean age 42 years) group of volunteers (n=68) with no history of renal diseases also participated in the study. Both groups underwent STE scans (Mindray, DC-80 Exp Insight) conducted by an experienced radiologist. The elastic modulus of each patient and volunteer was recorded. The renal fibrosis content of the patients' kidneys was verified using renal biopsy reports. After assessing the normality, student t-test was used to compare the means of the two groups. The mean value and standard deviation of elastic modulus of the fibrotic kidneys were  $24 \pm 8$  Pa and that of the healthy kidney was  $22 \pm 5$  Pa. There was no significant difference ( $p > 0.05$ ) between the fibrotic and healthy groups. Although the STE technique is capable of detecting liver fibrosis, our study shows no difference between fibrotic kidneys and healthy kidneys. The reason might be the vascular complexity of the kidneys.

**Keywords:** Sound touch elastography, Renal fibrosis, Chronic kidney disease

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