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Promoting Sustainable Kidney Health: The Asia-Pacific and Beyond

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Role of Magnetic Resonance Elastography and biomarkers in Early Chronic Kidney Disease-A hospital based study.

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Objectives : Fibrosis is the main cause of CKD and its progression. Currently, the only means of definitive assessment of fibrosis is by biopsy, an invasive procedure that samples approximately 1% of kidney. The invasiveness coupled with small sampling size and the risk of complications involved in the biopsy of fibrotic kidneys, and the nature of heterogeneous distribution of fibrosis have limited its utility in quantifying and monitoring changes in CKD patients. Accordingly, a non-invasive modality that assesses fibrosis on a kidney-wide scale would be of clinical utility. To assess if Magnetic Resonance Elastography (MRE), an imaging-based measure of organ stiffness, could noninvasively estimate kidney fibrosis in early CKD.
Methods : Data of patients with early CKD, collected, analyzed and described them in terms of clinical presentation, basic epidemiology with urine and blood lab parameters, renal biopsy performed in those who met with the standard criteria from left lower pole and then patients underwent renal MRE (3.0T MRI scanner) and the results of imaging stiffness correlated with renal biopsy and other indices'.
Results : N- 52 patients, (Mean age: 37.06 years). Mean stiffness of whole-kidney cortex and whole kidney stiffness ranged between 2.02 to 3.66 and 1.74 to 2.90 kPa respectively. Whole-kidney cortex stiffness and whole-kidney stiffness correlated with biopsy-derived interstitial fibrosis (IFTA) score [(r = -0.24; P,0.08) and (r = -0.21; P,0.01) respectively]. Fibrosis was heterogeneously distributed within each kidney, providing a possible explanation for the lack of a stronger fibrosis-stiffness correlation. We also found a weak correlation between whole-kidney/ cortex stiffness and both baseline eGFR and eGFR change over time.
Conclusions : There is significant relationship between MRE-derived stiffness and kidney fibrosis on biopsy. Given the limitations of chronic kidney biopsy, our pilot study suggests the potential for MRE as a novel non-invasive measure of whole-kidney fibrosis burden that may predict future changes in kidney function

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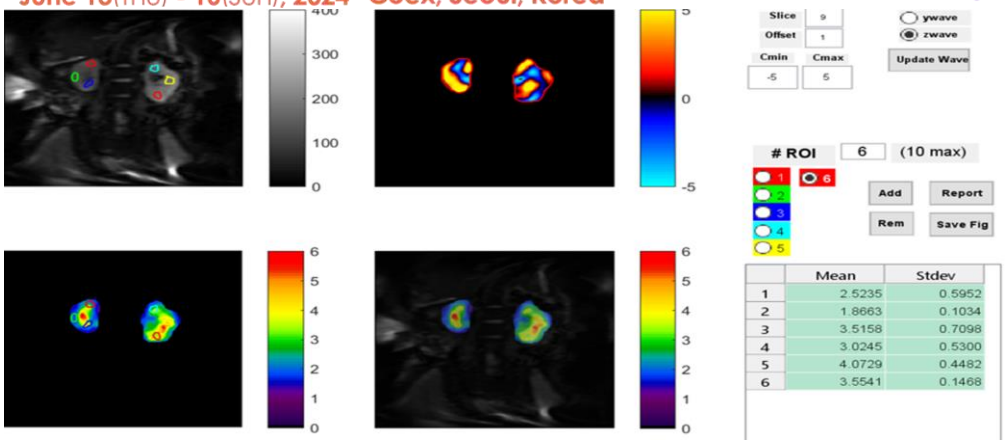
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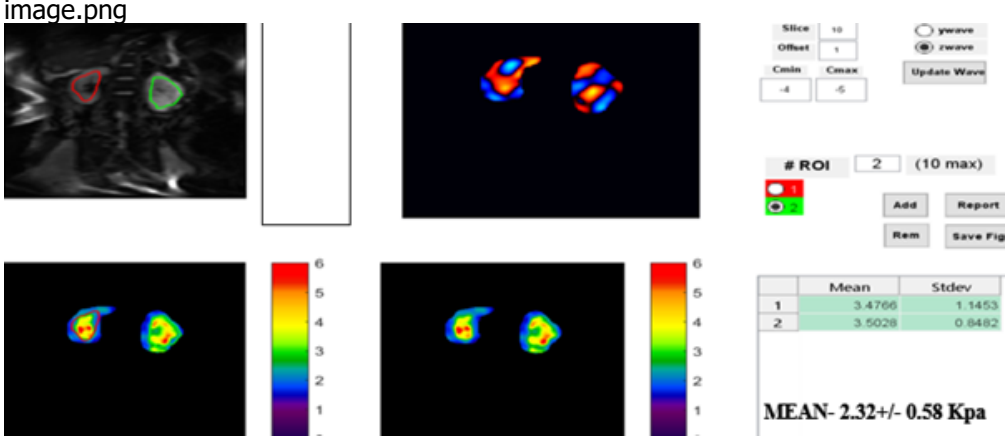
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