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Magnetic Resonance Imaging Methods Can be Used to Establish Approved Biomarkers in Autosomal Dominant Polycystic Kidney Disease (ADPKD): Lessons from the CRISP and HALT Studies in ADPKD

EDUCATIONAL OBJECTIVES

- Describe clinical characteristics of human and murine ADPKD utilizing magnetic resonance imaging approaches
- Demonstrate MR approaches to quantification of renal blood flow, total kidney volume and kidney and liver cyst volume in ADPKD
- Describe experience of MR imaging of ADPKD patients in observational cohorts and in interventional trials

PRESENTATION SUMMARY:

Total kidney volume measured by magnetic resonance imaging is being established and approved as a valid biomarker for disease progression in ADPKD. This disease is characterized by slow, progressive renal enlargement due to renal cyst expansion decades prior to loss of renal function. Cyst expansion results in bilateral intra-renal ischemia and activation of the rennin-angiotensin aldosterone system resulting in reduced renal blood flow. MR based imaging studies have established the rate of kidney growth in ADPKD with significant associations between TKV and renal complications and progressive renal dysfunction. Both phantom and in vivo human work have been combined to establish valid methods that determine total kidney volume, renal blood flow and total cyst volume in both the kidney and liver in this disorder. Based on these studies, MR based estimates of total kidney volume and liver cyst volume are now being used as primary endpoints in interventional randomized clinical trials. We not provide results from the initial validation studies, the establishment of TKV as a biomarker for disease progression in ADPKD and preliminary findings from multiple...
randomized clinical trials using these methods.

REFERENCES:


