Assessment of Solitary Simple Renal Cyst Progression in Asymptomatic Pediatric Patients

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Nemours

Introduction

- Renal cyst prevalence is lower in children than in adults
- More commonly identified with more frequent use of pediatric ultrasound
- Natural history is not well defined
- Serial imaging is commonly performed
- Unclear if such follow-up is necessary for simple renal cysts in asymptomatic pediatric patients

Methods

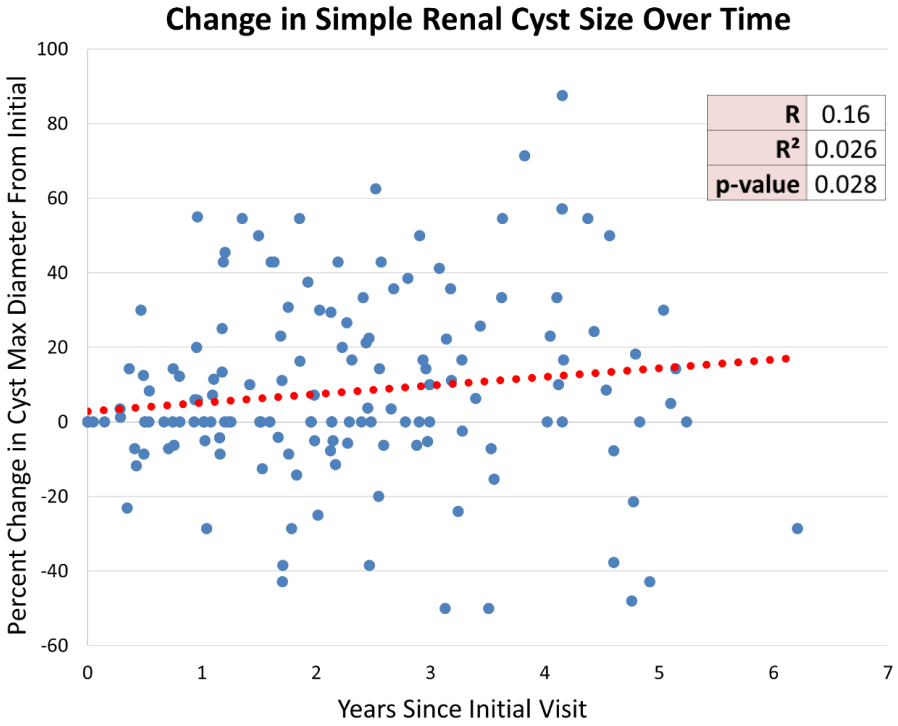
- IRB-approved retrospective chart review of patients from 3 Nemours healthcare sites
- Search parameters “cyst” and “kidney” identified 2445 patients, of whom **42** patients met inclusion criteria:
  - Initial visit after January 1, 2012
  - Solitary asymptomatic simple renal cyst
  - No pre-existing renal abnormalities (ADPKD, ARPKD, etc.)
  - ≥ 3 ultrasound studies after initial visit

Methods (continued)

- Data collection:
  - Interval time (years) of repeat US studies since initial diagnosis
  - Cyst size (maximum diameter)
  - Cyst shape (smooth vs. irregular)
  - Presence of new septations and/or calcification
  - Number of cysts
  - Symptoms
- Data analysis:
  - Change in cyst size calculated as % change in cyst maximum diameter from initial
  - Linear regression used to determine correlation of cyst size change with time in years since diagnosis

Results

- 42 children (27 M, 17 F)
- Data presented as mean ± SD
- Ages: 9.23 ± 5.00 years
- Initial renal cyst size (mm): 17.6 ± 13.9
- Follow-up duration of US studies: 3.67 ± 1.21 years
- From initial to latest study:
  - % change: 13.68 ± 29.96
  - Size change (mm): 1.5 ± 4.5 mm
- Statistically significant positive correlation between % change in cyst size and time ($p < 0.05$)



Results

- 2 patients (4.8%) developed change in cyst appearance
  - 1 acquired new septation
  - 1 acquired calcification
- 2 patients (4.8%) developed new cyst
- No patients developed cyst-related symptoms

Cyst Characteristic Changes From Initial to Latest Visit		
	n	%
All Cysts	42	100
Change in Shape	0	0
Acquired Septa	1	2.4
Acquired Calcification	1	2.4
New Cyst	2	4.8
Acquired Symptoms	0	0

Conclusion

- In 42 pediatric patients over mean follow-up duration of 3.67 years, asymptomatic solitary simple renal cysts:
  - Increased in size over time (but not clinically significant)
  - Rarely changed in appearance
  - Remained asymptomatic
  - Did not progress to a complex cyst requiring intervention
- Our results support those of Rediger et al. who noted that children with small number of simple or minimally complex renal cysts on initial US are unlikely to require treatment

Limitations

- Small number of patients
- Relatively short time interval

Future Directions

- These initial results support the fact that larger studies are needed to determine the role of follow-up renal ultrasound evaluation in asymptomatic simple renal cysts

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