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ORIGINAL ARTICLE

**Renal impairment is prevalent in pediatric NAFLD/MASLD and associated with disease severity**

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First published: 03 June 2024

[**https://doi.org/10.1002/jpn3.12272**](https://doi.org/10.1002/jpn3.12272)

[ClinicalTrials.gov](http://clinicaltrials.gov/) numbers: NAFLD Pediatric Database 2: NCT01061684 TONIC: NCT00063635 CyNCh: NCT01529268.

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**Abstract**

Objectives

Renal impairment is prevalent in adults with nonalcoholic fatty liver disease (NAFLD/metabolic dysfunction associated steatotic liver disease [MASLD]) and is associated with increased mortality. Pediatric data are limited. Our objective was to determine the prevalence of hyperfiltration or chronic kidney disease (CKD) in children with NAFLD/MASLD and determine links with liver disease severity.

Methods

Data from children who had previously participated in prospective, multicenter, pediatric studies by the Nonalcoholic Steatohepatitis Clinical Research Network (NASH-CRN) were collected. Renal function was determined using the calculated glomerular filtration rate (cGFR). Hyperfiltration was defined as cGFR > 135 mL/min/1.73m2, while CKD stage 2 or higher as cGFR < 90 mL/min/1.73 m2. Renal dysfunction progression was defined as transition from normal to hyperfiltration or to CKD stage ≥ 2, or change in CKD by ≥1 stage. Multinomial logistic regression models were used to determine the prevalence of CKD and independent associations between CKD and liver disease severity.

Results

The study included 1164 children (age 13 ± 3 years, 72% male, 71% Hispanic). The median cGFR was 121 mL/min/1.73 m2; 12% had CKD stage 2−5, while 27% had hyperfiltration. Hyperfiltration was independently associated with significant liver fibrosis (odds ratio: 1.45). Baseline renal function was not associated with progression in liver disease over a 2-year period (*n* = 145). Renal dysfunction worsened in 19% independently of other clinical risk factors. Progression of renal impairment was not associated with change in liver disease severity.

Conclusions

Renal impairment is prevalent in children with NAFLD/MASLD and hyperfiltration is independently associated with significant liver fibrosis. Almost 1/5 children have evidence of progression in renal dysfunction over 2 years, not associated with change in liver disease severity. Future assessments including additional renal impairment biomarkers are needed.