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LETTER TO THE EDITOR

Relationship between nonalcoholic fatty liver disease and chronic kidney disease could start in childhood

Anna Di Sessa, Stefano Guarino, Rosa Melone, Rossella Francesca De Simone, Pierluigi Marzuillo, Emanuele Miraglia del Giudice

ORCID number: Anna Di Sessa 0000-0002-5877-3757; Stefano Guarino 0000-0002-0551-5236; Rosa Melone 0000-0001-6897-5742; Rossella Francesca De Simone 0000-0001-5807-7121; Pierluigi Marzuillo 0000-0003-4682-0170; Emanuele Miraglia del Giudice 0000-0002-1492-076X.

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Anna Di Sessa, Stefano Guarino, Rosa Melone, Rossella Francesca De Simone, Pierluigi Marzuillo, Emanuele Miraglia del Giudice, Department of Woman, Child, and General and Specialized Surgery, University of Campania Luigi Vanvitelli, Naples 80138, Italy

Corresponding author: Pierluigi Marzuillo, MD, PhD, Assistant Professor, Department of Woman, Child, and General and Specialized Surgery, University of Campania Luigi Vanvitelli, Via de Crecchio, Naples 80138, Italy. pierluigi.marzuillo@gmail.com

Abstract

The relationship between nonalcoholic fatty liver disease (NAFLD) and chronic kidney disease (CKD) has gained considerable scientific interest in adults over the past few years. However, this association has recently emerged in children. Several published studies have suggested a role for NAFLD as a risk factor for CKD from the earliest age, with a potential influence of the major NAFLD risk polymorphisms, resulting in an increased risk of both cardiovascular and metabolic diseases. In view of the progressive course and increased cardio-metabolic risk closely related to NAFLD and CKD, we focused on the link between these diseases in childhood.

Key Words: Nonalcoholic fatty liver disease; Chronic kidney disease; Children; Liver

Core Tip: Nonalcoholic fatty liver disease has been linked to chronic kidney disease in childhood. Due to the intrinsic cardiometabolic burden related to both diseases, we highlighted the importance of knowledge of this relationship in pediatric patients.

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TO THE EDITOR

We read with interest the review by Mantovani *et al*[1] on the challenging association of nonalcoholic fatty liver disease (NAFLD) with chronic kidney disease (CKD)[1]. The authors provided a comprehensive overview on this association, linking two chronic diseases with a serious cardiometabolic burden and potentially leading to end-stage organ injury, by discussing both pathophysiological and therapeutic aspects.

In our opinion, it is important to underline that the relationship between NAFLD and CKD already occurs in childhood. Parallel to the increasing prevalence of childhood obesity, NAFLD has become the most common chronic liver disease in pediatric patients[2-4]. As demonstrated in adults, there is convincing evidence in children indicating NAFLD as a risk factor for CKD later in life[5-9]. Owing to the shared metabolic pathogenesis (including ectopic lipid accumulation and insulin resistance)[10], NAFLD has been found to be closely inter-related with renal dysfunction in childhood[9,11-14]. There is compelling evidence of a significant reduction in estimated glomerular filtration rate (eGFR) in obese children with NAFLD[8,12,14], as well as possible modulation of the main NAFLD genes (including the I148M *PNPLA3* variant[5,15-17], the E167K allele of *TM6SF2,* and *HSD17B13*)[5,15]. Early impairments in renal function (such as reduced eGFR and/or abnormal albuminuria) have been observed in children with obesity and NAFLD and linked to the severity of liver disease[8,12-14].

We wish to draw readers' attention to the early subclinical renal involvement in children with obesity and NAFLD. In view of the greater cardiometabolic risk (including type 2 diabetes, cardiovascular disease, and metabolic syndrome)[18-21] of these patients and the potential genetic influence of NAFLD polymorphisms, findings from these studies might have important clinical and prognostic implications at an early age. In our opinion, all children with obesity should undergo abdominal ultrasound to detect fatty liver[22], and careful monitoring with intensive lifestyle-dietary intervention programs. In the future, NAFLD management may also include genetic characterization, which could represent a crucial step to counteract the development of cardiovascular and metabolic disorders already occurring in childhood.

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