

Original article

Anaemia and hypoalbuminemia as risk factors for left ventricular diastolic dysfunction in children with chronic kidney disease on peritoneal dialysis[☆]

J. Antonio García-Bello^{a,*}, Joel Ortiz-Flores^b, Francisco E. Torres de la Riva^c,
G. Karina Mendoza-Moreno^b, Circe Gómez-Tenorio^b

^a División de Investigación en Salud, Unidad Médica de Alta Especialidad Hospital de Gineco-obstetricia n.º 3 Dr. Víctor Manuel Espinosa de los Reyes Sánchez, Instituto Mexicano del Seguro Social, Ciudad de México, Mexico

^b Servicio de Nefrología Pediátrica, Unidad Médica de Alta Especialidad, Hospital General Dr. Gaudencio González Garza, Centro Médico Nacional La Raza, Instituto Mexicano del Seguro Social, Ciudad de México, Mexico

^c Servicio de Cardiología Pediátrica, Unidad Médica de Alta Especialidad, Hospital General Dr. Gaudencio González Garza, Centro Médico Nacional La Raza, Instituto Mexicano del Seguro Social, Ciudad de México, Mexico

ARTICLE INFO

Article history:

Received 22 March 2017

Accepted 28 November 2017

Available online 6 July 2018

Keywords:

Left ventricular diastolic dysfunction

Cardiovascular disease

Chronic kidney disease

ABSTRACT

Introduction: Left ventricular diastolic dysfunction (LVDD) is an independent predictor of mortality in Chronic Kidney Disease (CKD). The increase in the E/E' ratio is an indicator of LVDD. The association between cardiovascular risk factors (CVRFs) and E/E' in children with automated peritoneal dialysis (APD) has not been widely studied.

Objective: To measure the association between CVRFs and E/E' in children with CKD on APD.
Methods: Cross-sectional, prolective, observational, analytical study of children aged 6–16 years on APD. We recorded age, gender, time since onset, time on dialysis, and measured weight, height, blood pressure, haemoglobin, albumin, calcium, phosphorus, parathyroid hormone, and C-reactive protein. E/E' ratio was measured and considered to have increased when it was higher than 15.

Results: Twenty-nine children were studied, (19 females). Age was 14.0 ± 2.5 years, and 16.9 ± 11.2 months with substitutive therapy. One patient had reduced left ventricular ejection fraction, and 21 (72.4%) had increased E/E' . E/E' correlated significantly with haemoglobin ($r = -0.53$, $p = 0.003$). Haemoglobin and albumin were significantly lower (9.72 ± 1.9 vs. 12.2 ± 1.8 ; $p = 0.004$ and 3.6 ± 0.5 vs. 4.0 ± 0.3 ; $p = 0.035$) and the proportion of patients with anaemia and hypoalbuminemia was significantly higher (85.7% vs. 37.5%; $p = 0.019$ and 61.9% vs. 12.5%; $p = 0.035$) in patients with increased E/E' . Haemoglobin was the only independent predictor of E/E' ($\beta = -0.66$; $p = 0.020$) and patients with anaemia were 10 times more likely to have increased E/E' (95% CI 1.5–65.6, $p = 0.016$).

DOI of original article:

<https://doi.org/10.1016/j.nefro.2017.11.024>.

* Please cite this article as: García-Bello JA, Ortiz-Flores J, Torres de la Riva FE, Mendoza-Moreno GK, Gómez-Tenorio C. Anemia e hipoalbuminemia como factores de riesgo de disfunción diastólica del ventrículo izquierdo en niños con insuficiencia renal crónica tratados con diálisis peritoneal. Nefrología. 2018;38:408–413.

* Corresponding author.

E-mail address: jagbello67@gmail.com (J.A. García-Bello).

2013-2514/© 2018 Sociedad Española de Nefrología. Published by Elsevier España, S.L.U. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

:
 Conclusions: 75% of the children had increased E/E'. Anaemia and hypoalbuminemia were significantly related with an increased E/e'.

© 2018 Sociedad Española de Nefrología. Published by Elsevier España, S.L.U. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Anemia e hipoalbuminemia como factores de riesgo de disfunción diastólica del ventrículo izquierdo en niños con insuficiencia renal crónica tratados con diálisis peritoneal

R E S U M E N

Palabras clave:

Disfunción diastólica del ventrículo izquierdo
 Enfermedad cardiovascular
 Insuficiencia renal crónica

Introducción: La disfunción diastólica del ventrículo izquierdo es predictor independiente de mortalidad en insuficiencia renal crónica (IRC). El incremento de la relación E/e' es un indicador de disfunción diastólica del ventrículo izquierdo. La asociación entre factores de riesgo cardiovascular y E/e' en niños con diálisis peritoneal automatizada (DPA) ha sido poco estudiada.

Objetivo: Medir la asociación entre los factores de riesgo cardiovascular y E/e' en niños con IRC en DPA.

Métodos: Estudio transversal, prolectivo, observacional, analítico de niños de 6-16 años en DPA. Medimos la edad, el género, el tiempo de evolución, el tiempo en diálisis, el peso, la talla, la tensión arterial, la hemoglobina, la albúmina, el calcio, el fósforo, la hormona paratiroidea y la proteína C reactiva. Se midió E/e' y se consideró incrementada cuando fue mayor de 15.

Resultados: Estudiamos 29 niños (19 mujeres) con edad de $14,0 \pm 2,5$ años y $16,9 \pm 11,2$ meses en tratamiento sustitutivo. Un paciente tuvo fracción de eyección ventricular izquierda disminuida, 21 (72,4%) relación E/e' incrementada. E/e' correlacionó significativamente con hemoglobina ($r = -0,53$, $p = 0,003$). La hemoglobina y la albúmina fueron significativamente menores ($9,72 \pm 1,9$ vs $12,2 \pm 1,8$; $p = 0,004$ y $3,6 \pm 0,5$ vs $4,0 \pm 0,3$; $p = 0,035$) y la proporción de pacientes con hipoalbuminemia y con anaemia fue significativamente mayor (85,7% vs 37,5%; $p = 0,019$ y 61,9% vs 12,5%; $p = 0,035$) en los pacientes con E/e' incrementada. La hemoglobina fue el único predictor independiente de E/e' ($\beta = -0,66$; $p = 0,020$). Los pacientes con anaemia tuvieron 10 veces más probabilidad de E/e' incrementada (IC 95% 1,5-65,6, $p = 0,016$).

Conclusiones: El 75% de los niños tuvieron E/e' incrementada. La anaemia y la hipoalbuminemia se asociaron significativamente con E/e' incrementada.

© 2018 Sociedad Española de Nefrología. Publicado por Elsevier España, S.L.U. Este es un artículo Open Access bajo la licencia CC BY-NC-ND (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

Chronic kidney disease (CKD) is a global public health problem; its incidence and prevalence are increasing, as well as the associated costs for healthcare. At the end of 2014, 9721 children were undergoing treatment for end stage chronic kidney disease in the United States, and the probability of 5-year survival was 90% in within the 2005–2009 period. Cardiovascular disease is the main cause of death in patients with CKD. In its report from 2016, the United States Renal Data System showed that while one-year mortality in younger than 21-years, adjusted for all causes, was 32 cases per 1000 patients at risk, cardiovascular disease was the cause of death in one third of cases, above infections that caused death in one sixth of patients.¹

Left ventricular hypertrophy and dysfunction are temporary manifestations of ventricular damage, and are considered consistent independent predictors of morbidity and mortality in patients with CKD. Left ventricular dysfunction may be detected even before a reduction in the left ventricular ejection fraction is observed. Therefore, the left ventricular dysfunction is considered an early manifestation of cardiac dysfunction. Throughout the last decade, the frequency of these disorders has been studied also in children and young adults with CKD.²

Left ventricular diastolic dysfunction (LVDD) is a clinical syndrome in which patients show signs and symptoms of heart failure, normal or almost normal LV ejection fraction and echocardiographic evidence of abnormal left ventricle filling or increased filling pressure. This heart failure with preserved ejection fraction is more common than heart failure with

Download English Version:

<https://daneshyari.com/en/article/8774004>

Download Persian Version:

<https://daneshyari.com/article/8774004>

[Daneshyari.com](https://daneshyari.com)