



Original article

Increased serum renalase in peritoneal dialysis patients: Is it related to cardiovascular disease risk?

Ebru Gok Oguz^{a,*}, Hadim Akoglu^a, Gulay Ulusal Okyay^a, Guner Karaveli Gursoy^a, Tolga Yildirim^a, Ozgur Merhametsiz^a, Tolga Cimen^b, Basol Canbakan^a, Ekrem Yeter^b, M. Deniz Ayli^a

^a Diskapi Yildirim Beyazit Education and Research Hospital, Department of Nephrology, Ankara, Turkey

^b Diskapi Yildirim Beyazit Education and Research Hospital, Department of Cardiology, Ankara, Turkey

ARTICLE INFO

Article history:

Received 1 January 2016

Accepted 23 November 2016

Available online xxx

Keywords:

C-reactive protein
Epicardial adipose tissue thickness
Left ventricular hypertrophy
Peritoneal dialysis
Renalase

ABSTRACT

Background: Renalase, with possible monoamine oxidase activity, is implicated in degradation of catecholamines; which suggests novel mechanisms of cardiovascular complications in patients with chronic kidney diseases. Epicardial adipose tissue (EAT) has been found to correlate with cardiovascular diseases (CVD) in dialysis patients. The present study aimed to evaluate the association of serum renalase levels with EAT thickness and other CVD risk factors in peritoneal dialysis (PD) patients.

Methods: The study included 40 PD patients and 40 healthy controls. All subjects underwent blood pressure and anthropometric measurements. Serum renalase was assessed by using a commercially available assay. Transthoracic echocardiography was used to measure EAT thickness and left ventricular mass index (LVMI) in all subjects.

Results: The median serum renalase level was significantly higher in the PD patients than in the control group [176.5 (100–278.3) vs 122 (53.3–170.0) ng/ml] ($p=0.001$). Renalase was positively correlated with C-reactive protein ($r=0.705$, $p<0.001$) and negatively correlated with RRF ($r=-0.511$, $p=0.021$). No correlation was observed between renalase and EAT thickness or LVMI. There was a strong correlation between EAT thickness and LVMI in both the PD patients and the controls ($r=0.848$, $p<0.001$ and $r=0.640$, $p<0.001$ respectively).

Conclusions: This study indicates that renalase is associated with CRP and residual renal function but not with EAT thickness as CVD risk factors in PD patients.

© 2016 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/>).

* Corresponding author.

E-mail address: ebrugokoguz@hotmail.com (E.G. Oguz).

<http://dx.doi.org/10.1016/j.nefro.2016.11.013>

0211-6995/© 2016 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/>).

Aumento de renalasa sérica en pacientes de diálisis peritoneal: ¿está relacionado con el riesgo de enfermedad cardiovascular?

R E S U M E N

Palabras clave:

Proteína C reactiva
Espesor del tejido adiposo epicárdico
Hipertrofia ventricular izquierda
Diálisis peritoneal
Renalasa

Introducción: La renalasa, posiblemente con actividad monoaminooxidasa, está implicada en la degradación de catecolaminas, lo que indica nuevos mecanismos de complicaciones cardiovasculares en pacientes con enfermedades renales crónicas. Se ha encontrado que el tejido adiposo epicárdico (TAE) se correlaciona con las enfermedades cardiovasculares (ECV) en pacientes de diálisis. El presente estudio tuvo como objetivo evaluar la asociación de los niveles de renalasa sérica con el espesor del EAT y otros factores de riesgo de ECV en pacientes de diálisis peritoneal (DP).

Métodos: El estudio incluyó a 40 pacientes de DP y a 40 controles sanos. Se tomaron la presión arterial y las medidas antropométricas de todos los individuos. Se evaluó la renalasa sérica mediante un ensayo disponible comercialmente. Se utilizó la ecocardiografía transtorácica para medir el espesor del TAE y el índice de masa ventricular izquierda (IMVI) en todos los individuos.

Resultados: La mediana del nivel de renalasa sérica fue significativamente mayor en los pacientes de DP que en el grupo control (176,5 [100-278,3] frente a 122 [5,3-170,0] ng/ml) ($p=0,001$). La renalasa se correlacionó positivamente con la proteína C reactiva ($r=0,705$; $p<0,001$) y negativamente con la FRR ($r=-0,511$, $p=0,021$). No se observó correlación entre la renalasa y el espesor del TAE ni el IMVI. Hubo una fuerte correlación entre el espesor del TAE y el IMVI tanto en los pacientes de DP como en los controles ($r=0,848$; $p<0,001$ y $r=0,640$; $p<0,001$, respectivamente).

Conclusiones: Este estudio indica que la renalasa está asociada con la proteína C reactiva y la función renal residual, pero no con el espesor del TAE, como factores de riesgo de ECV en pacientes de DP.

© 2016 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

Cardiovascular disease (CVD), defined as the presence of either congestive heart failure, ischemic heart disease, or left ventricular hypertrophy (LVH), remains the leading cause of morbidity and mortality among patients with end stage renal disease (ESRD) treated with dialysis.^{1,2} In addition to conventional risk factors, these patients are exposed to kidney disease specific factors including uremic toxins, anemia, vascular calcification, endothelial dysfunction, oxidative stress and hypervolemia, which accelerate development of CVD.³ Recently, epicardial adipose tissue (EAT), the visceral adipose tissue surrounding the heart and subepicardial coronary vessels, has been found to correlate with several cardiac comorbidities, including coronary artery disease and left ventricular dysfunction in patients undergoing peritoneal dialysis (PD) or hemodialysis.⁴⁻⁶ The relation between EAT and CVD is not fully understood but has been attributed to the several proatherosclerotic and proinflammatory hormones and cytokines such as TNF- α , IL-6, and adipocytokines, which are secreted from EAT and influence cardiac function.^{5,7}

Renalase, a recently discovered enzyme with monoamine oxidase activity, is implicated in degradation of catecholamines. This suggests novel mechanisms of cardiovascular complications in patients with chronic kidney diseases (CKD).⁸ Studies have demonstrated a stepwise increase in serum renalase concentration with higher stages of kidney

disease and markedly increased serum renalase levels in patients with ESRD both on hemodialysis and PD.⁹⁻¹¹ The present study aimed to evaluate the possible correlations of serum renalase levels with EAT thickness and other CVD risk factors in PD patients.

Material and methods

Study population

This is a cross-sectional study involving patients with ESRD older than 18 years old who received PD for at least 6 months ($n=50$) in our outpatient peritoneal dialysis unit and 40 healthy controls. Patients with structural heart disease ($n=1$), cardiac myopathy or pericardial disease ($n=2$), active infection ($n=5$), or other chronic inflammatory conditions ($n=2$) were excluded. Ultimately, a total of 40 PD patients (22 males and 18 females; mean age, 45.3 ± 13.8 years) were analyzed for the study. All patients were on continuous ambulatory PD with four manual exchanges daily using 1500–2500 ml solutions. Glucose concentrations of the solutions were adjusted depending on the patients' body fluid status. When indicated, the patients received icodextrin or nutritional treatment. The dose of dialysis was prescribed to reach a weekly Kt/V urea target of >1.7 . The control group included 40 age- and gender-matched healthy individuals (22 males and 18 females; mean age: 44.7 ± 12.9 years) without any relevant systemic

Download English Version:

<https://daneshyari.com/en/article/8774821>

Download Persian Version:

<https://daneshyari.com/article/8774821>

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