



Original article

Renal function is similar in solitary kidneys from patients with and without diabetes

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ABSTRACT

Objectives: Due to the shortage of living kidney donors and the current diabetes mellitus (DM) pandemic, studying the association of solitary kidney (SK) with DM is of paramount importance. Our aim was to assess the significance of the association between SK and DM. **Materials and methods:** Eighty-four patients with SK and DM (group A), with a mean age of 62.46 ± 12.72 years, of whom 36 were males and 48 were females, were enrolled in the study.

The control group (group B) comprised 84 SK patients without DM of similar age and duration of existence of a SK. Mean age: 61.58 ± 8.22 years, 23 males and 61 females. Serum creatinine, GFR (CKD-EPI), glycaemia, cholesterol, triglycerides, uric acid, proteinuria/24 h, systolic blood pressure (SBP), diastolic blood pressure (DBP) and BMI were assessed.

Results: The group of patients with SK and DM (group A) had a higher BMI ($p = 0.0007$), higher metabolic abnormalities (higher glycaemia [$p < 0.001$], triglycerides [$p = 0.0004$], uric acid [$p = 0.019$] and proteinuria/24 h [$p = 0.006$]). The study group also had a higher prevalence of hypertension ($p = 0.003$) and coronary artery disease ($p = 0.031$).

Conclusions: We found a higher value of proteinuria in the study group, significant metabolic abnormalities, as well as a higher prevalence of hypertension and coronary artery disease. However, no differences with respect to GFR were found, which could have significant implications for transplantation.

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Abbreviations: SK, solitary kidney; DM, diabetes mellitus; GFR, Glomerular Filtration Rate.

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La función renal es similar en los riñones únicos de los pacientes con y sin diabetes

R E S U M E N

Palabras clave:

Diabetes Mellitus (DM)
Riñón único (SK)
Proteinuria

Objetivos: Dada la reducción del número de los donantes vivos de riñones y la pandemia de diabetes mellitus (DM), estudiar la asociación del riñón único (RU) con la DM es de la mayor importancia. Nuestro objetivo fue evaluar la significación de la asociación entre el RU y la DM.

Material y métodos: Han sido estudiados 84 pacientes con RU y DM (grupo A), con edad media de $62,46 \pm 12,72$ años; eran 36 hombres y 48 mujeres.

El grupo control (grupo B) ha estado compuesto por 84 pacientes con RU sin DM, de la misma edad y del mismo periodo de tiempo que el grupo A; la edad media de estos pacientes fue de $61,58 \pm 8,22$ años; eran 23 hombres y 61 mujeres.

Hemos evaluado la creatinina sérica, el FG (CKD-EPI), la glucemia, el colesterol, los triglicéridos, el ácido úrico, la proteinuria de 24 h, la tensión arterial sistólica (TAS), la tensión arterial diastólica (TAD) y el IMC.

Resultados: El grupo de los pacientes con RU y DM (el grupo A) tuvo valores mayores del IMC ($p = 0,0007$), anomalías metabólicas más elevadas (la glucemia [$p < 0,001$], los triglicéridos [$p = 0,0004$], el ácido úrico [$p = 0,019$] y una proteinuria/24 h también más elevada [$p = 0,006$]). El grupo de estudio tuvo también una prevalencia elevada de la TA ($p = 0,003$) y de la enfermedad arterial coronaria ($p = 0,031$).

Conclusiones: Hemos encontrado un valor más elevado de la proteinuria en el grupo estudiado, anomalías metabólicas importantes y también prevalencia más alta de la TA y de la enfermedad arterial coronaria, pero ninguna diferencia entre los FG, lo que puede tener una implicación importante en el trasplante.

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Introduction

Diabetes mellitus (DM) is associated during its evolution with renal function impairment. The progression of diabetic nephropathy is related to the processes of hypertrophy and hyperfiltration at the level of the kidneys. Early Glomerular Filtration Rate elevation plays a central role in the pathogenesis and progression of renal disease in diabetes.¹

The solitary kidney (SK) is also associated with hypertrophy and hyperfiltration phenomena. The question is raised whether the phenomena of hypertrophy and hyperfiltration in the SK associated with DM are summed up. SK status and DM could have an additive effect on hypertrophy and hyperfiltration.

The possibility exists of a greater risk of individuals with a SK to present nephropathy in the case of coexistence of associated diabetes mellitus.²

DM can be considered to represent a risk factor in case of association with the SK.

However, it is worth remembering that only some of the diabetic patients develop diabetic nephropathy, which indicates the intervention of a genetic factor.

Due to the shortage of living kidney donors and the current DM pandemics, studying the association of the SK with DM is of paramount importance.

Many diabetic donor kidneys have been given to diabetic recipients with early graft survival being similar to that among nondiabetic recipients.³

Becker et al. suggest that diabetic kidneys can safely expand the donor pool and that diabetic kidneys can be used in transplantation without risk to patient or graft survival. Pre-existing diabetic injury in the donor may increase the risk for proteinuria, compromised renal function, and posttransplant glucose intolerance.⁴

The aim of our study was to assess the significance of the association between the SK and the presence or absence of DM.

Methods

Eighty-four patients with SK and DM (group A), mean age: 62.46 ± 12.72 years, 36 M and 48 F, with a mean duration of a SK of 15.7 ± 15.15 years were enrolled into the study. Six patients (7.14%) had a congenital SK.

The control group (group B) comprised 84 SK patients without DM of similar age and duration of existence of a SK: mean age: 61.58 ± 8.22 years, 23 M and 61 F, and mean duration of existence of a SK: 15.26 ± 13.76 years. Four patients (4.76%) had a congenital SK.

The inclusion criteria were history of unilateral nephrectomy in patients with surgically acquired SK and presence of a SK confirmed by at least two imaging methods in patients with congenital SK.

The study was approved by the Ethics Committee of the Emergency Clinical County Hospital Timisoara, Romania.

All patients were assessed for serum Creatinine, GFR(CKD-EPI), glycemia, cholesterol, triglycerides, serum uric acid,

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