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SHORT REPORT

CHRONIC KIDNEY DISEASE SCREENING AND RENOPROTECTION IN TYPE 2 DIABETES

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Abstract

Background: Type 2 diabetes (T2D) is a major cause of chronic kidney disease. Control of hypertension and the use of angiotensin converting enzyme inhibitors (ACEI) and/or angiotensin II receptor blockers especially in those with proteinuria have been shown to protect against chronic kidney disease and delay its progression to kidney failure.

Methods: We reviewed the medical records of 169 patients at 12 months with a view of auditing the screening for chronic kidney disease and the use of renoprotective measures.

Results: Urinalysis was done in 49.1% and serum creatinine in 50.3%. No patient had glomerular filtration rate estimated. Seventy nine (67.6%) of the hypertensive patients were on anti-hypertensives. ACEI was used in 49 (45.8%) of these patients BP control was optimal in 29.1%.

Conclusion: There is poor adherence to guidelines on chronic kidney disease screening and renoprotection in T2D.

Keywords: *Chronic kidney disease, diabetes, renoprotection*

Résumé

Fond: Le type 2 le diabète (T2D) est une cause importante de la maladie chronique de rein. La commande de l'hypertension et l'utilisation des inhibiteurs d'enzyme convertissants d'angiotensine (ACEI) et/ou des dresseurs de récepteur de l'angiotensine II particulièrement dans ceux avec le proteinuria ont été montrées pour se protéger contre la maladie chronique de rein et pour retarder sa progression à l'échec de rein.

Méthodes: Nous avons passé en revue les disques médicaux de 169 patients à 12 mois avec une vue d'auditer le criblage pour la maladie chronique de rein et l'utilisation des mesures renoprotective.

Résultats: L'analyse d'urine a été faite en 49.1% et créatinine de sérum dans 50.3%. Aucun patient n'a fait estimer le taux de filtrage glomérulaire. Soixante-dix-neuf (67.6%) des patients hypertendus étaient sur des antihypertensifs. ACEI a été employé dans 49 (45.8%) de ces patients que la commande de BP était optimale dans 29.1%.

Conclusion: Il y a d'adhérence pauvre aux directives sur le criblage et le renoprotection chroniques de la maladie de rein dans T2D.

Mots-clés: *La maladie chronique de rein, diabète, renoprotection*

Chronic kidney disease (CKD) is of pandemic proportion and a major cause of morbidity and mortality worldwide. Current clinical practice guidelines emphasize the need for prevention of end

stage renal disease (ESRD) largely by the screening of persons at increased risk of and early detection and treatment of CKD.[1] Urine examination for markers of kidney damage (like proteinuria and haematuria) and an estimation of glomerular filtration rate (GFR) by the Cock-Croft Gault (CG) formula[2] or the Modification of Diet in Renal Disease (MDRD) study derived equation[3] using serum creatinine form the mainstay of this screening.

Type 2 Diabetes (T2D) is a major cause of CKD.[4, 5] Once overt nephropathy occurs there is a relentless progression to ESRD. Control of hypertension and the use of Angiotensin converting enzyme inhibitors (ACEI) and/or Angiotensin II receptor blockers (ARB) especially in those with proteinuria have been shown to delay this progression.[6-8] This report describes screening for CKD and renoprotection in T2D in a teaching hospital in Nigeria. This audit would contribute immensely to fighting the global scourge of CKD.

Materials and Methods

We analyzed records of T2D patients being followed up at the Diabetes Clinic of the Jos University Teaching Hospital (JUTH) in a cross-sectional study between June and September 2004. Assessment of records was done at 12 months of continued care at the clinic.

Clinical data analyzed included age, gender, duration of diabetes, documentation of urinalysis and estimation of GFR (eGFR) from serum creatinine measurement. Other variables of interest were treatment of hypertension and the use of ACEI/ARB.

Statistical analysis

Continuous variables were reported as mean±standard deviation and categorical variables as proportions. The Chi-Squared statistic was used to compare proportions. A p value of less than 0.05 was considered significant.

Results

Study characteristics

Records of 169 consecutive type 2 diabetics (68 males and 101 females) were reviewed. One hundred and seven (63.3%) patients were hypertensive and 62 (36.7%) non-hypertensive. The mean age of the patients was 51±12 years. The duration of T2D ranged from one (1) to 27 years with a median of four (4) years.

Screening for CKD

Eighty three patients (49.1%) had urinalysis done. Proteinuria was present 19.7% of those who had urinalysis carried out. Serum creatinine was assayed in 85 (50.3%) patients. None had eGFR documented. Analysis of eGFR in those who had serum creatinine showed that eight percent had GFR less than 60ml/mi/1.73m^2.

Urinalysis was done in 47.7% of those with hypertension and 52.3% of those without (OR 1.77, 95% CI 0.92- 3.40; p = .11). Similarly, serum creatinine was done in 51.4% of those with hypertension and 48.6% of those without (OR 1.67, 95% CI 0.88- 3.16; p = .11).

Renoprotection

Seventy nine (67.6%) of the hypertensive patients were on treatment for hypertension and 28 (26.2%) were not. ACEI was used in 49 (45.8%) of these patients. BP control was satisfactory (<130/80 mm Hg) only in 23 (29.1%) of the patients on treatment for hypertension. Only two non-hypertensives were on ACEI therapy. No patient (hypertensive or not) was on ARB. The treatment of hypertension was ACEI based in four (19.0%) of the patients with proteinuria and four (16.7%) without (OR 1.17, 95% CI 0.25-5.42).

Discussion

Main finding of the study

The main findings of our study were; 1) less than half of the patients with T2D are screened for CKD; 2) only two-thirds of T2D patients with hypertension are on hypertensive medication. In addition, only a third of those with hypertension had optimal BP control.

Screening for CKD

An earlier study in Nigeria showed that only 16.9% of diabetic patients are screened for CKD.[9] Harzallah and colleagues[10] in a similar study of Tunisian diabetics demonstrated that only 19.8% had urinalysis done. The low screening rate for CKD is not only limited to the "diabetic" population as a recent survey revealed that only 26% of patients in primary care had their GFR estimated.[11] The National Kidney Foundation Kidney Disease Outcomes Quality Initiative (KDOQI) clinical practice guidelines recommend screening for CKD in at risk individuals using proteinuria and the eGFR.[1]

Renoprotection

As cardinal as BP control is to the prevention of and slowing the progression of CKD, only a third of our patients had optimal BP control. A similar figure has been reported from Australia.[12] This corroborates previous reports. The National Health and Nutrition Examination Survey revealed that only 40% of US hypertensive diabetics achieved blood pressure of <130/80 mm Hg.[13] Lower figures (between 13% and 23%) have been reported in Europe.[14-16]

Though ACEIs was used in nearly half of the diabetics with hypertension in this study, the use of ACEIs was scanty in those with proteinuria (19%).

There was no patient on an ARB. Blockade of the Renin-Angiotensin-Aldosterone system has been shown to reduce proteinuria and retard the decline of GFR in CKD. A recent survey in the UK showed that 32% of diabetics with proteinuria at CKD stage 3 were on an ACEI and as much as 26% of diabetics with hypertension were not on any BP lowering medication regardless of the CKD stage.[17] In clinical practice renoprotection is sub-optimal in T2D.

Adherence to international guidelines is no doubt generally poor. The gap between guidelines and clinical practice needs to be bridged. Regular audit, continuing medical education, local adaptation of international guidelines and action checklists have been shown to improve the care of diabetics.[15, 18, 19]

In conclusion, this study demonstrates a low screening rate for CKD and an inadequate utilization of renoprotection in T2D. The burden of CKD, especially that due to T2D will remain unchecked unless measures are instituted to improve adherence to existing guidelines.

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