

Renal Chronic Disease And Management Of It`S Complications

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Abstract

Chronic kidney disease is recognized as a major health problem. Numbers of prevalent SRK patients will continue to rise, reflecting the growing elderly population and increasing numbers of patients with diabetes and hypertension.

As numbers of SRK patients increase, primary care practitioners will be confronted with management of the complex medical problems unique to patients with chronic renal impairment. As well documented in the literature, the nephrologist rarely manages the medical needs of SRK patients until renal replacement therapy is required. The most frequent complications associated with SRK: anemia, hyperlipidemia, nutrition, osteodystrophy, and cardiovascular risk.

Patients with SRK present several complex management issues to health care providers. The staging system introduced by the National Kidney Foundation is a significant accomplishment, which stratifies patients according to disease severity. In addition, the guidelines are an excellent tool for management of SRK and dialysis patients and recommend treatments according to disease stage. These interventions may reduce morbidity and mortality in these patients. With early identification and treatment of anemia, renal osteodystrophy, uremia, hyperlipidemia, and cardiovascular disease, primary care physicians and nephrologists together are making significant strides toward extending and improving the lives of patients with chronic renal disease.

Keywords: Complications, renal chronic disease, management

INTRODUCTION

Renal chronic disease (RCD) is defined as kidney damage or decrease of the rate of glomerular filtration (GFR) below 60 ml / min per 1.73 m² in 3 months or more, regardless of the cause. Kidney Disease Quality Initiative (KDOQI) has classified RCD in five stages. (KJDOQI-2012)

National Institute of Health and Clinical Excellence in the UK (NICE) in 2008 has modified this classification, dividing stage 3 of the RCD into 3A and 3B, respectively GFR 45-59 ml / min for 1.73 m² and 30-44 ml / min for 1.73 m².

Epidemiology of Renal Chronic Disease

The true incidence and prevalence of CRD within a community are difficult to ascertain quickly in moderate RCD because it is usually asymptomatic. However, various epidemiological studies are trying to clarify this issue and have made relatively similar observations suggesting a prevalence of RCD around 10%, albuminuria (mainly micro albuminuria) around 7%, and GFR below 60 ml / min per 1.73 m² around 3%.

Examples of some studies based on representative population in the epidemiological study of RCD.

Study	State	Project	N	Result (%) MA	Result (%) RCD
NHANES III	USA	CS/L	15.626	12	11
PREVEND	Netherland	CS/L	40.000	7	
NEOERICA	United Kingdom	CS/service based	130.226		11(F),6(M)
HUNT II	Norway	CS	65.181	6	10
EPIC-Norfolk	United Kingdom	CS	23.964	12	
MONICA Augsburg	Germany	CS	2.136	8	
AusDiab	Australia	CS	11.247	6	10
Taiwan	Taiwan	CS/L	462.293		12
Beijing	China	CS	13.925		13
Takahata	Japan	CS	2.321	14	

Table 1. Representation of some population-based studies in the epidemiology of RCD (Jurgen Floege, Richard J. Johnson, John Feehally 2011)

Epidemiology of last stage of the renal disease (ESRD)

Global epidemiology of ESRD is heterogeneous and influenced by several factors. As a result, the incidence and prevalence of ESRD vary greatly from country to country.

Disparities in ESRD incidence and spread within and between developed countries reflect the racial and ethnic differences and their impact

on the spread of diabetes and hypertension in the respective countries and communities.

Recently, different rates of progression of the CRD population, referral patterns, and pre-ESRD care quality have been associated with the heterogeneity of ESRD rates in different parts of the world. Inequalities in developing countries are likely to reflect the stability and access to renal replacement therapy (RRT) in the low and average economies.

The cost of treating patients with ESRD is significant and has an impact on the care provision, in this context, it is proposed that there is a clear and direct connection between the gross national product and the availability of RRT in most countries. (Scena FP 2000) During the next decade, the industrialized nations will struggle to meet the demands of ESRD expansion programs; in the United States, it is estimated that the annual costs for ESRD will reach more than US \$ 52 by 2030.(USRD 2007)

In UK, renal services currently receive about 2% of the budget of the National Health Service, and it is set to grow with the increasing number of people requiring RRT globally.(Asell D, Feehally J, Feest-2006)

Factors that influence the onset and progression of chronic renal disease

Summary of risk factors associated with the onset and progression of the CRD

Initiating factors	Progression factors
Systemic hypertension	Age (Being old)
Diabetes mellitus	Gender (male)
Cardiovascular diseases	Race/ Ethnicity
Dyslipidemia	Genetic predisposition
Obesity/ Metabolic syndrome	Low management of blood pressure
Hyperuricemia	Low management of glycemic
Smoking	Proteinuria
Low social and economic status	Cardiovascular disease
Exposure to nephrotoxins: NSAIDs, analgesics, use of traditional herbs, exposure to heavy metals (like lead)	Dyslipidemia Smoking Obesity/ Metabolic syndrome Hyperuricemia Low social and economic status Alcohol consumption Nephrotoxins AIJS Radio-contrast materials Medical herbs Acute kidney damage

Table 2. Summary of risk factors associated with the onset and progression of the CRD.

NSAIDs, non steroidal anti-inflammatory drugs; RCM, radiocontrast materials.

Known CRD susceptibility factors include genetic predisposition and family, race (African-Caribbean, Indo-Asian), maternal-fetal factors (low birth weight, malnutrition in uterus), age (elderly), and gender (male). Beyond CRD sensitivity, acceptance factors are likely to cause illness.

THE PURPOSE

This research aims to serve the medical, the patient and the community in general regarding:

- Coordination of appropriate services for patients identified with CRD
- Assessment and management of co-morbid conditions to decrease the loss of kidney function
- Assessment and management of risk factors to prevent or treat cardiovascular disease
- Evaluation and treatment of complications associated with reduced kidney function
- Preparation of patients for kidney failure and replacement therapy
- Coordination of services for kidney function by dialysis or transplantation in cases when they are indicated.

MATERIALS AND METHODS

The study is typically descriptive, based on literature research related to clinical guidelines that are designed to assist clinicians by providing an analytical framework for the assessment and treatment of patients. They are not intended to replace the judgment of a clinician or to establish a protocol for all patients with a particular condition.

THE RESULTS (RESEARCH COVERAGE)

Clinical evaluation and management of chronic kidney disease

Early detection of CRD with the introduction of a management plan algorithm disease can slow the rate of decline in kidney function and reduce cardiovascular risk. Many patients with CRD are known by healthcare professionals because they are receiving treatment for hypertension, cardiovascular disease or diabetes. They can be identified because a high level of serum creatinine or urinary abnormality is detected in the next routine.

- *Evaluation of the patient with suspected chronic renal disease*

The discovery of a calculated GFR (EGFR) of less than 60 ml / min in patients in whom renal function was unknown or normal, requires a history and examination with attention to blood pressure and urinalysis (for protein and blood) to assess whether the disease is acute or chronic. Proteinuria is an important diagnostic sign and warning, and its presence indicates a higher risk for progression of kidney disease and cardiovascular complications.(Asell D, Feehally J, Feest 2006) Blood pressure should be checked in all patients. Those with stage 3 to 5 stages of CRD should be evaluated for other complications such as dyslipidemia, anemia, and biochemical disorders that characterize bone mineral disorder.

- *Clinical manifestations*

With the exception of hypertension, CRD has few clinical manifestations during phases 1 and 2 (GFR > 60 ml / min to 1.73 m²), the presence of proteinuria or hematuria is the basic indicator of kidney disease. Other complications (discussed in the following sections) tend to develop progressively as the GFR falls below 60 and especially below 30 ml / min per 1.73 m² (ie, stages 4 and 5 CRD)

- a. *Hypertension*

About 50% to 75% of individuals with stage 3-5 CRD have hypertension. Control of blood pressure slows the rate of decline in kidney function and reduces cardiovascular complications. All classes of antihypertensive agents can be used in patients with CRD, although agents blocking the renin - angiotensin (RAS) can offer better renoprotection . Multidrug therapies are usually needed to achieve blood pressure control. Traditional lifestyle should be encouraged. In general, thiazides are recommended in patients with stage 1 to 3 CRD and the Loop of Henle diuretics in those with the most severe damage in the kidney. Available evidence aim a blood pressure below 130/80 mm Hg for CRD patients not receiving dialysis, but below 125/75 mm Hg for those with urinary protein excretion of more than 1g/24 hour.(KDOQI-2003)

- b. *Dyslipidemia*

CRD stage 3 patients often develop dyslipidemia with elevated plasma triglycerides and low high-density lipoprotein cholesterol. (KDOQI-2003)

CRD patients in stage 3 who also have vascular disease can benefit from the therapy with statins, but until today there is no strong proof to suggest that CRD patients without disease of the blood vessels or those with more advanced stages of CRD can benefit from these drugs. Moreover, the risk of myopathy is increased from the use of fibrates and statins in CKID. Therefore fiber dosage should be reduced in patients with stage 3 and 4 of CRD and fibrates should be avoided in stage 5 of CRD. Statins should be initiated with low initial doses due to the accumulation of the drug.

- c. *Anemia*

Anemia is common in stage 3-5 of CRD and is caused by a relative erythropoietin deficiency, although reduced iron availability and chronic inflammation are common contributory factors. Anemia may contribute to cardiac dysfunction and left ventricular hypertrophy. Hemoglobin concentration is recommended at a level of 11 -13 g / dl. (Kalantar-Zadeh K 2005) Partial correction of anemia does not accelerate the decline of renal function, but may require increases in antihypertensive therapy.

d. Mineral metabolism and the bone

Hyperphosphatemia together with the deficiency of 1,25-dihydroxyvitamin D₃ contribute to secondary hyperparathyroidism. Prevention of secondary hyperparathyroidism requires dietary phosphate restrictions and administration in binders of phosphate. (Locatelli F, Aljama P, Barany P 2004) Many CRD patients with stage 3 and 4 are also deficient in 25 - hydroxyvitamin D₃ (Levin A, Bakris GL, Molitch M 2005), and replacement by mouth with vitamin D₃ can increase the levels of plasma derivative 1.25 - dihydroxy .(KDOQI-2003)

e. Metabolic acidosis

Metabolic acidosis associated with CRD is caused by the failure of extraction of hydrogen ions and can be combined with bicarbonate loss. Severe metabolic acidosis (eg, serum bicarbonate <20 mmol / l) associated with symptoms in a patient with stage 5 of the CRD is a sign to start dialysis. If dialysis is not immediately available, sodium bicarbonate orally at a dose up to 1.2 g four times a day may be considered.

f. Malnutrition

Malnutrition is common among patients on dialysis, but also occurs in stages 4 and 5 and CRD is associated with an increased risk of death. (Kalantar-Zadeh K.2005) The causes are multifactorial and include anorexia, acidosis, insulin resistance, inflammation, oxidative stress and loss of urinary protein. Biochemical indicators include a decrease of albumin, transferrin and cholesterol in serum. Weight should be monitored in patients who progress to stages 4 and 5 of CRD. If patients do not respond to dietary meeting, initiation of dialysis should be considered.

g. Psychological manifestations

Anxiety and depression are common in patients with severe CRD and they are due to loss of health and lifestyle changes. Management consists of education and counseling. Short-term antidepressant therapy can help, and some patients benefit from sedation at night, especially during hospital admissions.

CONCLUSION

- Since the number of patients with CRD increases, primary care physicians will be faced with complex and unique managing medical problems for patients with chronic renal impairment. CRD patients present complex management problems to health care providers. With early examination and treatment of anemia, renal osteodystrophy, uremia, hyperlipidemia, and cardiovascular disease, primary care physicians together with nephrologists can make significant steps towards improving the life and extending it to patients with chronic diseases renal.

- Although the management of patients with initial not progressive CRD is becoming the responsibility of primary care physicians, nephrologists should evaluate those individuals who are likely to progress ESRD and require renal replacement therapy. Criteria for referral are included in management algorithms. Such criteria are not absolute, but should provide a guide to the primary care physician as to which patients are likely to benefit from secondary care.
- Over 20 million adults in the US have CRD, and 20 million others at increased risk. Education about CRD should be part of the management of people at risk of CRD.
- People at risk should have regular measurements of creatinine, albumin in the urine and blood pressure.
- Changes in lifestyle - exercise, smoking cessation, healthy food.
- Pursuit of medications
- Strict control of blood pressure and glycemic reduces the risk for CRD.
- Early treatment of CRD with ACEI / ARB reduces the risk of kidney failure and CDK
- Treatment of anemia improves QOL and is associated with reduced risk for CDK.
- Healthy bones - calcium and security.
- Nutrition - adequate protein and calories consumption, phosphorus and calcium management.
- Avoid toxic renal therapies - NSAIDs, IV contrast, certain antibiotics, etc.
- Fluid Management, prevention of infections

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