Chronic Kidney Disease: Definition, Classification, Diagnosis

Introduction

The term "Chronic Renal Failure" has been replaced by "Chronic Kidney Disease", the term (kidney) being more understandable to many a patient. Additionally, the term 'failure' which conjured up a despondent picture, has been replaced. We all are aware that chronic kidney disease slowly advances and patients may present at various stages and not necessarily when dialysis is inevitable. The new terminology and staging would bring uniformity in use across the globe and communication would be more meaningful and better understood.

Definition

Chronic Kidney Disease is defined by the following:

Structural or functional abnormalities of the kidneys for ≥ 3 months as manifested by either kidney damage with or without decreased GFR as defined by

- Pathologic abnormalities

  Markers of kidney damage, including abnormalities in the composition of the blood or urine, or abnormalities in imaging test

- GFR < 60 ml/min/1.73m^2, with or without kidney damage

As mentioned before, chronic kidney disease has been classified into stages. This makes good sense as the prevalence, number and severity of abnormalities correspond to the level of GFR. Therapies could be tailored to the need of the patient.

Stages of Chronic Kidney Disease

Stage	Description	GFR
		ml/min/1.73m^2
1	Kidney damage with normal or ↑ GFR	> 90
2	Mild ↓ GFR	60-90
3	Moderate ↓ GFR	30-59
4	Severe ↓ GFR	15-29
5	Kidney failure	<15 or dialysis

Chronic Kidney Failure could present either for the first time late in the course of the disease (Stage 5) or could have a slow meandering course characterized by episodes of remissions and relapses (glomerular disease, symptomatic stone disease, etc) or may be consequent to a reported kidney ailment in the past (acute kidney failure). Differentiating between acute and chronic kidney failure is essential, for the plans of action differ.

Differentiating between Acute and Chronic Kidney Failure

Chronicity of kidney disease is characterized by prior sustained elevation of BUN and creatinine for more than 3 months, small kidneys, renal bone disease and renal biopsy evidence of chronicity. Less reliable evidence include: lowered hemoglobin, BUN:Creatinine ratio of ≥10:1, stability of azotemia, low calcium and elevated phosphorous.

Etiologies of Chronic Kidney Disease

India is gradually establishing itself as the diabetes capital of the world, if it has not already done so. It is therefore anticipated that, in the years to come, the number of chronic kidney disease patients requiring renal replacement therapy will far outstrip the facilities available for the same or for that matter even the economic resources. This makes prevention the need of the hour.

Diabetes and hypertension related kidney disease constitute the predominant causes for chronic kidney disease and have displaced glomerular diseases. Another emerging group with chronic kidney disease are the patients with chronic tubulointerstitial disorders. This group has its share of identifiable etiologic agents which include the "painkiller meds" that find indiscriminate use and an equally important group of "herbal" agents that are widely prescribed and used. Many of the kidney disorders could be prevented and timely steps taken could limit the consequences related to disease process. Progress of the disease also, can be gauged by following the patient and classifying the patient according to the stage of his disease. The patient too could be aware of his/her progress with the estimated GFR (using mathematical formulae based on serum creatinine levels).

Classification of CKD and action plan

CKD Stage	Description	GFR ml/min/1.73m^2	Action
At increased risk	Risk Factors for CKD are present but without markers of kidney damage	≥ 90	Peridoically test for CKD; treat modifiable risk factors for CKD
1	Kidney damage with normal or increased GFR	≥ 90	Diagnose and treat type of kidney disease; treat co-morbid conditions; slow progression of CKD;treat modifiable cardiovascular disease risk factors; periodically re-stage
2	Kidney damage with mild reduction of GFR	60-89	Adjust drug dosages for level of GFR
3	Moderate reduction of GFR	30-59	Evaluate for and treat complications of CKD; avoid nephrotoxic drugs
4	Severe reduction of GFR	15-29	Prepare for kidney replacement therapy
5	Kidney failure	<15	Start kidney replacement

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