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Review Article

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Review on Chronic Kidney Disease Follow up in Primary Health Care

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ABSTRACT

Chronic Kidney Disease (CKD) refers to a host of different kidney structures and function disorders. It represents a global health issue for people that must be controlled in its first stages according to its 2002 guidelines for defining and classifying. This disease management is categorized based on intensity levels, evaluated from Glomerular Filtration Rate (GFR), clinical diagnosis (cause and pathology), and albuminuria. Routine laboratory tests can be used to detect CKD. There are therapies available to curb its progression/prevent its development, mitigate the risk of cardiovascular disease and complications, and increase the overall life quality and survival rate in patients with CKD. The Cochrane, NCBI, Embase, Pubmed, and Medline databases were investigated to get information about patients with CKD. Incidence, etiology, and management options were analyzed. Chronic Kidney Disease (CKD) is a condition that is currently affecting an ever-increasing percentage of the general population and has ties to many other chronic conditions such as hypertension and diabetes, which should in part explain the spike as people are living to be generally older. This disease does not display any early signs and symptoms and is often discovered incidentally. CKD leads to end-stage renal failure and possibly death.

Key words: *Kidney disorders, Chronic kidney disease, Primary care, Glomerular filtration rate*

INTRODUCTION

Chronic kidney disease is a term that refers broadly to several different disorders affecting the kidney's function and structure. CKD expresses itself in various ways relating partly to severity, rate of progression, cause, and pathology. Since the introduction of the guidelines, which included a conceptual model and definition of CKD 10 years ago [1], a shift has taken place wherein the disease went from being acknowledged as a potentially lethal disorder affecting a limited number of people to being considered a common disorder with distinct levels of severity that requires a collaborative public health strategy for detection, prevention, and management [2]. Indeed, CKD is a fairly common disease with an incidence in the general population of approximately 10% [3]. However,

progression to End-Stage Kidney Disease (ESKD) does not pose a great risk to most patients with CKD, and management in a primary care setting is generally sufficient [4].

Nowadays, Chronic Kidney Disease is the 16th leading worldwide cause of years of life lost. Recommendations for managing the patients with CKD have been made by organizations such as Kidney Disease: The UK National Institute for Health and Clinical Excellence and Improving Global Outcomes, the Canadian Society of Nephrology [5] to assist physicians in limiting the potential for cardiovascular disease and ESKD. However, despite these guidelines, the level of care for this disease worldwide has not been homogenized [6]. Primary care physicians must practice appropriate screening, diagnosis, and management to avoid end-stage kidney disease, cardiovascular disease, and death, all harmful outcomes associated with CKD. Clinically speaking, Chronic Kidney Disease is explained as an abnormality in kidney structure or function existing for more than 3 months [7].

The purpose of this review is to discuss CKD in primary care and how the physician tends to manage it.

MATERIALS AND METHODS

Articles were selected from the PubMed database, and the Mesh was searched for the following key terms: ((“Chronic Kidney Disease” [Mesh]) AND (“Primary Care” [Mesh]) OR (Management [Mesh])).

The inclusion criteria for this study encompassed articles relating to chronic Kidney Disease in Primary care management and assessment. Articles that did not focus primarily on this topic were excluded. Additional publications that were referenced in these studies were also found and utilized.

RESULTS AND DISCUSSION

CKD is usually identified incidentally or through urine studies and routine screenings. Patients may also describe flank pain, decreased urine output, gross hematuria, albuminuria (“foamy urine”), and nocturia, but these incidents are less common. Patients with advanced CKD likely report a metallic taste, fatigue, poor appetite, vomiting, nausea, weight loss, pruritus, mood changes, dyspnea, or peripheral edema [8]. Practitioners should be wary of symptoms that are likely to point to a systemic cause (i.e., hemoptysis, lymphadenopathy, hearing loss, rash, neuropathy) or urinary obstruction [8] when they examine a patient who has been diagnosed with CKD or who is suspected of having CKD. Patients should also be examined for possible CKD risk factors, including their family history of kidney disease, likely comorbidities (i.e., chronic infections, diabetes, autoimmune disease, and hypertension), their nephrolithiasis background (kidney stones) and urinary tract infections, genetic risk factors including sickle cell trait [9], nephrotoxin exposure such as herbal remedies containing antibiotic treatments, aristolochic acid, like gentamicin, chemotherapies, nonsteroidal anti-inflammatory drugs (NSAIDs), and phosphate-based bowel preparations.

Diagnosis

CKD is defined as the continued existence of an abnormality in kidney function or structure for more than 3 months [7]. This includes one or more of the following:

- Glomerular filtration rate (GFR) below 60 mL/min/1.73 m2;
- Albuminuria (i.e., urine albumin superior or equal to 30 mg per 24 hours or urine albumin-to-creatinine ratio (ACR) superior or equal to 30 mg/g);
- Histology abnormalities and urine sediment, or imaging evidence implicating kidney damage;
- Renal tubular disorders;
- Prior kidney transplantation [7].

Duration of kidney disease should be determined to distinguish CKD from other diseases such as acute kidney disease (kidney damage or evidence of lower kidney function for less than 3 months) and acute kidney injury (known as acute renal failure, sudden episode of kidney damage, or failure that occurs within a few hours to a few days, typically within 2–7 days) [10]. It is necessary to repeat assessments to substantiate the diagnosis of CKD if there is any ambiguity about the duration of kidney disease experienced by the patient.

Once a diagnosis of CKD has been reached, staging must be determined. The staging of CKD is predicated on the underlying cause, albuminuria, and GFR [7]. The staging of GFR is classified in the following manner [7]:

- G1 (GFR ≥90 mL/min/1.73 m2);
- G2 (GFR 60–89 mL/min/1.73 m2);

- G3a (45–59 mL/min/1.73 m2);
- G3b (30–44 mL/min/1.73 m2);
- G4 (15–29 mL/min/1.73 m2);
- G5 (<15 mL/min/1.73 m2).

GFR may also be assessed using basic tests such as iohexol or iothalamate plasma clearance [11]. The taxonomy of CKD is usually classified by presence/absence of systemic disease (including genetic disorders, autoimmune, diabetes, chronic infection, and malignancy) and possible position of an anatomic abnormality (which is in turn categorized into cystic/congenital, tubulointerstitial, vascular, and glomerular diseases [7]). Its underlying cause is difficult to detect, but prognosis and treatment can be significantly impacted if the cause of CKD is determined. For instance, polycystic kidney disease will advance to ESKD more rapidly than other kidney diseases and usually demands that the clinician evaluates for manifestations outside the kidneys. Targeted treatments, including tolvaptan (a vasopressin V2 receptor antagonist that slows decline in GFR), should be considered [11]. A nephrologist must be seen by patients with CKD and for whom an underlying cause was not uncovered.
For the most part, CKD presents as asymptomatic, which highlights the importance of screening for detection as early as possible [12]. Indeed, the National Kidney Foundation developed a kidney profile test that evaluates urine ACR and a GFR estimate from serum creatinine [13]. It is recommended to adopt a risk-based methodology to screening according to multiple guidelines to clinical practice, with screening encouraged in patients older than 60 years and those with preexisting hypertension or diabetes [12]. Patients having clinical risk factors including kidney stones, autoimmune disease, reduced kidney mass, exposure to certain medications such as NSAIDs or lithium, regular UTIs, obesity, and prior episodes of acute kidney injury, among others, should also be considered for screening [12]. However, thus far, no randomized clinical trials have taken place, and whether or not screening asymptomatic patients for CKD improves outcomes has yet to be determined.

Risk factors

The most widespread risk factors of chronic kidney disease are clinical, sociodemographic, and genetic.
Clinical factors that participate in kidney disease include obesity, diabetes, recurrent urinary tract infections and obstructions, kidney stones, hypertension, systemic infections (such as HIV, hepatitis B, and C), autoimmune diseases, malignancy, reduced kidney mass (such as low birth weight and nephrectomy), smoking, intake of nephrotoxic medications (such as NSAID's, lithium and other herbal remedies), recreational/illegal drug use by intravenous means (such as cocaine and heroin), a family history of kidney disease and acute kidney injury, among others. Sociodemographic factors include being non-white, low-income, low education, and above 60. Genetic factors include Alport syndrome, congenital renal anomalies, sickle cell trait/disease, APOL1 risk alleles, and polycystic kidney disease [12].

Management in primary care

Reduction of cardiovascular disease risk

Statistically, cardiovascular disease is a bigger threat to patients with CKD than those without it [14]. Indeed, in patients with cardiovascular disease, a negative outcome is more likely in the presence of CKD [14]. This is why cardiovascular risk reduction is a crucial aspect of CKD, and patients 50 years or older are usually given statins (low to moderate dose) irrespective of their actual low-density lipoprotein cholesterol level [15].

Management of hypertension

Hypertension is an undisputed risk factor for cardiovascular disease (CV) and a major determining factor in kidney disease progression. CV risk for patients with CKD is greater than the risk of reaching end-stage CKD. There are many guidelines discussing treatments for hypertension in patients with CKD [16], but all agree on the necessity of evaluating the presence and severity of albuminuria. For adults with diabetes, a blockade of the renin-angiotensin-aldosterone system with either an Angiotensin II Receptor Blocker (ARB) or an Angiotensin-Converting Enzyme inhibitor (ACE-I) is advised, as well as a urine ACR of at least 30 mg per 24 hours for any adult with a urine ACR of at least 300 mg per 24 hours [12]. Rigorous management of BP down to less than 130/80 mm Hg is considered a benchmark objective for patients with CKD [12].

Management of diabetes mellitus

It is common knowledge that glycaemic efficacy is dependent on kidney function. CKD patients with diabetes must manage their condition. Indeed, CKD progression can be delayed with glycemic control, and most guidelines suggest that hemoglobin A1C levels by nearly 7.0% [12]. It is best to favor medications that are metabolized by the liver and partially excreted by the kidneys instead of medications that are cleared by the kidneys, such as glyburide. These must be prevented. Sodium-glucose co-transporter 2 (SGLT2) inhibitors are recommended for patients with severely high albuminuria, as they have been proven to decrease the likelihood of cardiovascular events and preserve kidney function.

Nephrotoxins

Drugs are a frequent source of acute renal injury. Indeed, medication-induced nephrotoxicity represents approximately 20% of acquired incidents of acute renal failure, and in the elderly, that percentage rises to 60%. Drug-induced renal impairment is a situation that must be preemptively avoided if possible, especially in patients already advanced in age, with a higher risk of diabetes and cardiovascular disease, and who take multiple medications that are likely to harm renal function.

To avoid nephrotoxins, all patients with CKD must be counseled, of which there is a long list. NSAIDs should not be administered to patients with CKD either, particularly those already undergoing ACE-I or ARB therapy [12].

Drug dosing

Patients with CKD are frequently subjected to revisions of their drug dosages [17]. In general, they should not be administered medications if these medications are less likely to provide any benefit, as there is a higher risk of adverse drug-related incidents in patients with CKD [18]. Medications that necessitate a reduction in dosage include most antibiotics, direct oral anticoagulants, insulin, opiates, chemotherapeutic agents, oral hypoglycemic agents, gabapentin, and pregabalin, among many others [12].

CONCLUSION

Chronic Kidney Disease (CKD) is a condition that is currently affecting an ever-increasing percentage of the general population and has tied to many other chronic conditions such as hypertension and diabetes, which should explain the spike as people are living older. This disease does not display any early signs and symptoms and is often discovered incidentally. CKD leads to end-stage renal failure and possibly death.

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