

Role of Family Physician in Prevention and Management of CKD

Chronic Kidney Disease (CKD) is a global pandemic but a highly under-recognized health problem in India. Diabetes and Hypertension are common causes of CKD in the world and are important lifestyle diseases whose prevalence is increasing day by day. If properly targeted, these diseases could be controlled to slow down the growth of CKD in the population.

Diabetes affects 3-5 % of the Indian population (approx. 30 million people). Furthermore, WHO estimates that by 2025 the prevalence in India will increase to 57.2 million, almost 3 fold higher than that of the US. Diabetics are 17 times more likely to develop CKD. Thus, from diabetes alone 10-20 million individuals in India will develop CKD. The prevalence of hypertension could be anywhere between 15-30% derived from various studies. If 10% of hypertensives develop CKD, then the total figure of CKD patients from diabetes and hypertension alone is staggering.

If we extrapolate the figures from the US population data that 5-10 % of the general population have CKD then, translated to an Indian population of approx. 1 billion people, 100 million could be suffering from CKD – a mind boggling figure catapulting CKD to the position of a compelling health problem requiring concerted efforts not only of the nephrology community but also of primary care physicians, governmental agencies, NGOs and common people.

As the first and prime level of associating with the patient, general practitioners play a very important role in helping in the prevention of kidney disease. Your contribution in this respect would be:

- (A) To recognize the pandemic of CKD and to know that upto 10% of the Indian population could be suffering from CKD.
- (B) To know about the new Terminology and classification of CKD as explained in other articles in this issue.
- (C) To be aware that Sr. Creatinine rises only after 50% of kidney is damaged and that Sr. Creatinine is an insensitive and inaccurate marker of renal function and laboratories should report eGFR or estimated GFR.
- (D) To identify population at risk and do screening tests for the community and the individual.
- (E) At risk population comprises of patients suffering from
 1. Diabetes
 2. Hypertension
 3. Kidney stones
 4. High risk Pregnancies
 5. Past history of acute renal failure
 6. Old age
 7. Those habitually on Pain-killers such as patients suffering from back-ache, arthritis, migraine etc.
 8. Patients on Ayurvedic drugs
 9. Those drinking hard water
 10. Those with chronically infected scabies and sore-throats
 11. Those with family history of kidney diseases

For the "At Risk Population": Role of G.P.

- I. Educate the patient of the risk for developing CKD
- II. Reinforce the need for Periodic Health Check-ups
- III. Refer at risk patients to NGOs like Mumbai Kidney Foundation(MKF), National Kidney Foundation(NKF) and similar organizations who regularly conduct Kidney disease detection camps

What tests are needed?

- ˘ Urine routine analysis - To pick up Macroalbuminuria
- ˘ Spot Urine albumin/Creatinine ratio (to pick up Microalbuminuria)
- ˘ Sr. Creatinine or better still calculated creatinine clearance or estimated GFR (eGFR)
- ˘ If microalbuminuria or macroalbuminuria is detected, then institute treatment as per the stage of CKD

At risk population & stage I and II

ABC of prevention strategy in Diabetes & Hypertension

- A. HbA1C - keep < 7.0
- B. Blood Pressure < 130/80 mmHg & if possible <125/75 mmHg
- C. Cholesterol – LDL < 100 mg/dl

A for HbA1C

- ˘ Measures the average blood sugar over 3 months
- ˘ Keep FBS between 80 – 100 and PLBS < 140mg

How to achieve-

- ˘ Dietary modification
- ˘ Regular OHA / Insulin
- ˘ Exercise
- ˘ SMBG (Self Monitoring Blood Glucose)
- ˘ Regular follow up

B for Blood pressure

Target BP must be < 130/80 and if associated risk factors are present, it should be < 125/75

How to achieve-

- ˘ Salt restriction
- ˘ Regular Exercise
- ˘ Timely initiated treatment
- ˘ Regular monitoring [SMBP]
- ˘ Use of ACEIs or ARBs

C for cholesterol – LDL Cholesterol<100

- ˘ Yearly checking
- ˘ Dietary advice
- ˘ Exercise
- ˘ Statins & if required fibrates

Drugs of choice for prevention of progression of renal disease are ACE inhibitors & / or Angiotensin receptor blockers

ESTABLISHED CKD STAGE III ONWARDS

Treat your patient in consultation with a Nephrologist.

- 1) Approach to a case of elevated serum creatinine:
Any patient with a serum creatinine > 1.5 in males and > 1.3 in females should be put on red alert.
 - a) Cross check with a different lab.
 - b) Rule out causes of false positivity e.g.: Drugs, dehydration, gastrointestinal bleed etc.
 - c) Calculate serum creatinine clearance by Cockcroft and Gault formula (eGFR)
- Once the creatinine is confirmed to be elevated, proceed to the next step.

2) Differentiate ARF from CRF

Definitive Criteria for CRF

- Abnormal Urinalysis & creatinine value for > 3 months
- Small kidneys on USG
- Evidence of Renal Osteodystrophy
- Biopsy evidence of CRF

Relative points to differentiate ARF from CRF (points in favor of CRF)

- a) Anaemia
- b) Decrease in Calcium & Increase in Phosphorus
- c) Urea/Creatinine ratio >10:1
- d) Patients very comfortable with the degree of azotemia
- e) Other end organ damage. e.g.: fundus, ECG etc.

3) Search for Correctable factor

- a) Dehydration: Look for evidence of postural hypotension
- b) Obstruction: Check USG for Hydronephrosis
- c) ACE Inhibitors & Diuretics in combination or Diuretics alone in a situation of volume depletion can worsen the azotemia & hence attain euvoemia
- d) Patient may be on NSAIDs – omit NSAIDs, Cox-2 inhibitors etc.
- e) Severe hypertension or hypotension can worsen azotemia. Hence try to attain normal BP.
- f) Hunt for UTI, fever or sepsis & try to correct it with non-nephrotoxic drugs.

4) Treat the underlying disease

- a) Remove obstruction e.g. stones, prostate, etc.
- b) Control BP & Diabetes
- c) Steroids or Immunosuppressants for Glomerulonephritis
- d) Angioplasty for Renovascular disease

5) Retard progression of Kidney disease

- a) Specific renoprotective therapy with ACE inhibitors eg. Enalapril, Lisinopril, ramipril etc. or Angiotensin receptor blockage eg. Losartan, Valdesartan, Telmisartan, etc.
- b) Dietary Protein restriction to <0.8 gm/day
- c) Lipid lowering agents – statins or fibrates
- d) Strict control of Diabetes & Hypertension
- e) Avoid smoking
- f) Treat obesity

Treatment of Complications of CRF

• **Anaemia Correction-**

- a) Injection Erythropoietin available as 2000, 3000, 4000, 5000 & 10,000 units given as subcutaneous injection thrice a week [approximately 100 units / kg]
- b) I.V. Iron: Iron sucrose available as I.V. infusion to be given as slow I.V. bolus; found to be extremely safe with no anaphylactic reaction; given once a week if serum ferritin or transferrin saturation is low.
- c) Inj.B12 and Folic acid: As per the cause of anaemia

• **Altered Calcium Phosphorous product-**

If phosphorous is high & calcium is low— use phosphate binders such as

- Calcium carbonate [Shelcal etc]
- Calcium acetate [Lowphos or Hypophos]

If phosphorous & calcium both are high, use phosphate binders such as Sevelamar [Renagel, Phoseal, Acutrol etc.] 400mg to 800mg three times a day along with meals so as to remove phosphorous obtained from diet.

• **Correction of Volume overload-**

- Salt restriction [< 2 gm/day]
- Fluid restriction to [< 750 ml/day]
- Diuretics except Potassium sparing diuretics such as Spironolactone, Amiloride etc.

• **Electrolytes Imbalance:-**

Most dangerous is HYPERKALEMIA

- Avoid Fruits/ Juices/ Coconut water
- Use Potassium binding resins such as K-bind or P-bind
- Use Diuretics such as Frusemide or Torsemide
- Check for drugs which increase potassium such as: - spironolactone, ACE inhibitors & ARBs, β blockers, NSAIDs, etc.

Role of G.P. in stage V CKD

- Explain the treatment options in a case of CKD stage V to the patient & prepare him & his family Physically, Mentally & Financially.
- The various treatment options are –
 - I. Conservative treatment till the patient reaches the stage of dialysis
 - II. Continuous ambulatory peritoneal dialysis or CAPD
 - III. Hemodialysis
 - IV. Kidney transplantation

• **VACCINATION-**

- (1) Hepatitis B vaccine for all CKD patients, usually double dose is given i.e. 2ml [1ml on each deltoid] at 0, 1, 2 & 6 months
- (2) Influenza & Pneumococcal vaccines for all elderly patients as they are prone to Respiratory Infections.

CONSTRUCTION OF A.V.FISTULA

Once the serum creatinine reaches 5-6 mg%, an AV fistula must be constructed by a small surgery generally done on the forearm under local anaesthesia. It is a day care surgery requiring surgical skills but does not carry much risk & the patient should be encouraged to do it in advance so as to prevent the need for emergency jugular catheterization for initiation of dialysis.

The AV fistula generally takes 4 weeks to mature & hence has to be done in advance. It is generally a **life long, life line** for patients.

For the G.P:- BP should not be measured in the hand with the fistula, nor give injections or collect blood from it. However the patient can use the hand for all normal activity.

HEMO-DIALYSIS :- is generally done 2-3 times per week, each session lasting for 4-5 hours. This timetable should be rigidly followed by the patient. 2 long fistula needles are inserted into the large veins (of the fore-arm or the arm) which develop 1-2 months after the construction of AV fistula. These needles are connected via blood tubings to an artificial dialyser mounted on a machine which monitors safe dialysis.

CAPD:- In this procedure, a thin silastic catheter is inserted under L.A. into the peritoneal cavity. The patient uses it to empty 2 liters of fluid from a special CAPD bag mounted on I.V. stand into the cavity. In 10 minutes the fluid enters in & the bag is disconnected. The patient is then free to do his work & after 4-6 hours, empties the peritoneal cavity, only to put in a new bagful of fluid.

The CAPD patient does 3-4 such exchanges in a day, 365 days a year & can be fully ambulatory anywhere in the world.

KIDNEY TRANSPLANT

This is the best form of Renal Replacement Therapy & should be advocated unless contraindicated. The present law permits only live - related kidney transplant & cadaveric kidney transplant.

For using organs from a cadaveric donor, one has to declare a patient brain dead after a series of tests which are meticulously laid down by the law. This brain death is certified by a Neurologist/Neurosurgeon & an intensivist unconnected with the transplant team. One cadaver donor can source organs for the following transplants.

- ˘ 2 kidney transplants
- ˘ 1 Liver transplant
- ˘ Cardiac transplant
- ˘ Pancreas transplant
- ˘ Lung transplant

Thus as a G.P. one must encourage cadaveric transplantation & people should be encouraged to pledge their organs for donation after death.

Mumbai Kidney Foundation has a donor card which your patient can fill up & keep with him / her permanently.

Dr. Umesh B. Khanna

Consultant Nephrologist,
Nanavati and Asian Heart Hospital;
Chairman, Mumbai Kidney Foundation.