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A Constructive Therapy Analysis to Diminish Annihilatory Coalescence; Hypertension and Chronic Kidney Disease

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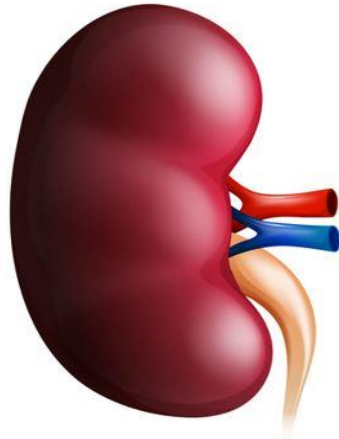
Keywords: chronic kidney disease, ACE inhibitor, ARB's, antihypertensive

ABSTRACT

Patients with hypertension have a dramatically increased risk of chronic kidney disease, this condition is not effectively controlled. A large subgroup of hypertensive, diabetic patients suffering with chronic kidney disease. There will be a chance of preventing this condition by early identification and treatment. In this study, the goal is to identify hypertensive patients who are with chronic kidney disease and targeted for appropriate monitoring and treatment. Specified antihypertensive drug regimens with the special counselling sessions regarding the food and fitness helped the patients to recover from early stage of chronic kidney disease. This is achieved optimally by using the ACE inhibitors and ARB's.

CKD definition

Chronic kidney disease is defined as a progressive loss function and is characterized by the gradual replacement of normal kidney architecture with interstitial fibrosis. With or without decreased GFR occurring over several months to years.



III. KIDNEY FUNCTIONS ^[1]: -

Filtration is the primary function of kidney. It purifies blood by removing waste materials, extra salts and other chemicals. There are 7 major functions of the kidney they are:

1. Elimination of waste products.
2. Removal of excess fluid.
3. Maintain balance of chemicals and minerals.
4. Blood pressure control.
5. Erythropoietic production.
6. Vitamin d production.

RISK FACTORS OF CKD:

- Cigarette smoking
- Obesity
- High cholesterol

- Diabetes (types 1 and 2)
- Autoimmune disease
- Atherosclerosis
- Cirrhosis and liver failure
- Narrowing of the artery that supplies your kidney
- Kidney cancer
- Bladder cancer
- Kidney stones
- Kidney infection

PATHOPHYSIOLOGY:

Elevated blood pressure damages the blood vessels throughout the body or within the kidney. By this impairment of the kidney function is noted. Kidney loses the ability to filter. As a complication, increase of fluid volume in the blood is seen.

Hypertension is one of the major factors that causes CKD. The chronic, uncontrolled hypertension can lead to an increase in the intraglomerular pressure, by which improper glomerular filtration is seen, that causes proteinuria or microalbuminuria. This is because of the damage to the glomeruli. Microalbuminuria is the first sign of CKD²⁻³. As CKD progresses, proteinuria (protein-to-creatinine ratio $\geq 200\text{mg/g}$) is developed.^{4,5,6}

STAGES OF CHRONIC KIDNEY DISEASE:

➤ Renal impairment is divided into 2 categories.

1. Progressive or chronic renal insufficiency can be referred to as chronic kidney disease
2. Rapid loss of kidney function over days to weeks can be referred to as acute kidney failure.

NKF classification:

STAGES OF CKD	GFR
Stage 1	≥90 ml/min/1.73m ²
Stage 2	60–89
Stage 3	30–59
Stage 4	15–29
Stage 5	<15

The guidelines recommend ACE inhibitors and ARB's as first-line choice of drugs in patients with the proteinuria and diabetes as well. Few articles said that ACE inhibitors and ARBs are similarly effective in reducing hypertension and proteinuria ⁷. Combination of both ACE inhibitors and an ARB may not be suggested, as they may worsen kidney function even more. Monotherapy of an ACE inhibitor will be the good choice rather going to combination therapy ^{7,8}.

Patients with CKA and hypertension, diuretics can be preferred. Because they experience fluid retention. Patients with CKD 1 to 3 stage, thiazide diuretics are suggested and have been effective drugs for CVD and hypertension ⁹. Loop diuretics are prescribed who are above CKD stage ^{3 10}.

Calcium channel blockers are comes in second or third line therapy in the treatment of patients with CKD with hypertension ^{11, 12}. Non dihydropyridine Calcium channel blockers are the choice of drug in patients with proteinuria, it can be given alone or along with ARB, the action is significantly good ¹³. Dihydropyridine Calcium channel blockers can be used as second-line therapy for patients who are without proteinuria and with hypertension ¹⁰.

Aldosterone antagonists can increase the risk of hyperkalemia, especially when it is taken with ACE-inhibitors or ARB's, so monitoring is important when these medications are prescribed to the patient ¹⁴.

Nonpharmacologic Recommendations:

Lifestyle Modification:

DASH diet is an approach to stop hypertension, like having fruits and vegetables, low fat diet has to be taken, avoid taking saturated fats, by this meal plan the systolic blood pressure significantly falls down. Along with it decrease the sodium and alcohol intake. Physical

activity increased to reduce the weight. By following this healthy dietary approach along with regular physical activity ¹⁵.

Both medications and changed dietary habits can play a vital role and make achieve better results as expected.

MATERIALS AND METHODS

Study site: the present study was conducted at an in-patient and outpatient department of nephrology

Study design: This is a prospective observational study.

Study period: 6 months

Data sources referred.

Patient interview

Patient case sheet

Laboratory data

Questionnaire

All the data was documented in a suitable designed data collection form developed from the study which includes

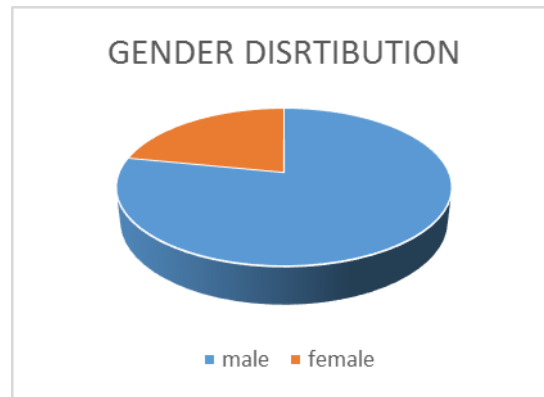
Laboratory data: blood pressure, serum creatinine, drugs from the prescription

Patient interview through questioner.

RESULTS AND DISCUSSION

GENDER DISTRIBUTION:

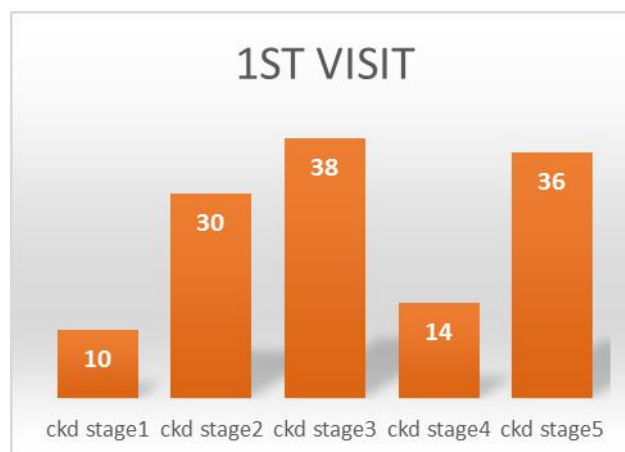
Gender	Population
Total	128
Male	100
Female	28



In the present study, 128 patients of CKD and ESRD were screened. In these 128 patients, 100 patients were male and 28 patients were female. Male populations are suffering with CKD compared to female.

CKD STAGES FIRST VISIT REVIEW

CKD STAGES	PATIENTS
Stage 1	10
Stage 2	30
Stage 3	38
Stage 4	14
Stage 5	36

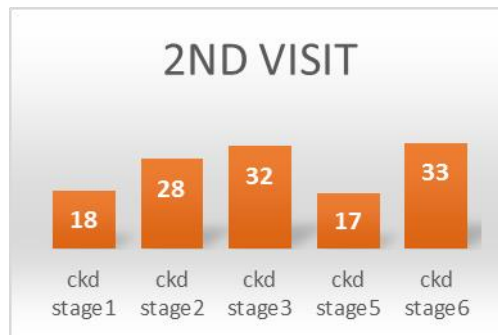


The above graph shows that the number of patients visited to hospital with hypertension along with CKD. There are 10 patients in CKD stage 1, in CKD stage 2 there are 30 patients, in the CKD stage 3 there are 38 patients, in the CKD stage 4 there are 14 patients, and in the CKD stage 5 there are 36 patients. In this study, the ACE inhibitor and ARB's are prescribed,

along with proper patient education. In addition to that, we asked the patient to come for follow up after 2 months.

CKD STAGES SECOND VISIT REVIEW

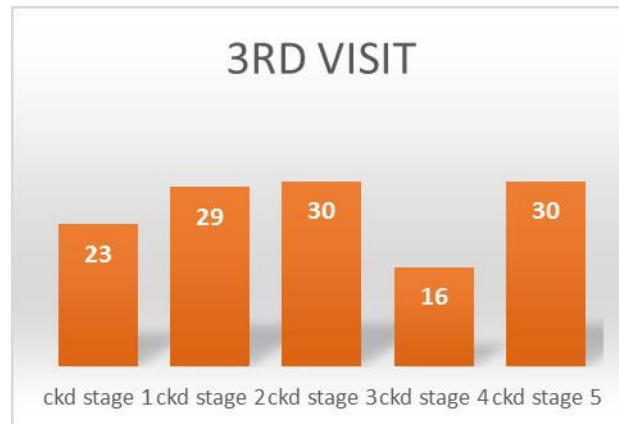
CKD STAGES	PATIENTS
Stage 1	18
Stage 2	28
Stage 3	32
Stage 4	17
Stage 5	33



The above table illustrates that the number of patients are hypertensive with CKD. In CKD stage 1 there are 18 patients, in CKD stage 2 there are 28 patients, in the CKD stage 3 there are 32 patients, in the CKD stage 4 there are 17 patients, and in the CKD stage 5 there are 33 patients with CKD. As this was the second visit, the patients were consulted physician and prescribed the same drugs; because there was slight improvement was seen. The difference was not too high but the result was better than expected. Patients were satisfied with the treatment and started to follow the advices made by the doctors and pharmacists as well.

CKD STAGES THIRD VISIT REVIEW

CKD STAGES	PATIENTS
Stage 1	23
Stage 2	29
Stage 3	30
Stage 4	16
Stage 5	30



The above table explains about the patients who came for the third visit after 2 months. In the CKD stage 1 there are 23 patients, in the CKD stage 2 there are 29 patients, in CKD stage 3 there are 30 patients, in CKD stage 4 there are 16 patients, and in the stage 5 there are 30 patients. When we compare the first and third visit patient's reports, the improvement was good, most of the patients under CKD stage 2 and 3 were improved and they were in stage 1. Although patients of CKD stage 5 were treated effectively, the improvement is not much as compare with other patients in CKD stage 4, 3, 2 and 1.

CONCLUSION

Involvement of clinical pharmacist in prescribing the right medication to the patient with intensive care monitoring along with physician can make patient health even better. Along with this paper counselling regarding the lifestyle and medication regimen is important to the patient. Adding the ACE inhibitor and ARBS to the patient in order to control hypertension and also to reduce the burden to kidney shows better results. Diet, routine physical activity, lifestyle modification and proper medication use is also a key to CKD patient. Proper patient counselling helped the patient to achieve the good results.

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