

**CHRONIC KIDNEY DISEASE FEDERATED WITH DIABETES MELLITUS,
HYPERTENSION, TRAMADOL HYDROCHLORIDE – A CASE SERIES**

Bhuvanewari P., Punitha S.* and Deva Priya S. A.

India.

*Corresponding Author: Punitha S.

India.

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ABSTRACT

Chronic kidney disease is a restrained loss of conventional kidney function anticipated to a diversity of assorted influences. Here we are reporting a case of 3 patients with Chronic Kidney Disease which is induced by Insulin-dependent diabetes mellitus, Hypertension, Tramadol Hydrochloride, and their pathophysiology of them were discussed. In this case, 3 patients had undergone dialysis, and their pre-dialysis and post dialysis vitals, past medical history were noted. The feasible discernment of the case and a therapeutic protocol with an auspicious consequence has been deliberated. Pharmacists have an essential role in analyzing a case study of patients and to improve the quality of life and reduce hospitalization of the patients.

KEYWORDS: In this case, 3 patients had undergone dialysis, and their pre-dialysis and post dialysis vitals, past medical history were noted.

INTRODUCTION

Chronic kidney disease is an escalating, un-repairable retrogression of renal function. At this juncture, we are reporting three manifestations escorted by etiological genesis. An impediment of CKD encompasses Infection, Diabetes, Hypertension, Cancer, Pancreatitis, Mental and Emotional disorders.^[1] Studies possess 8.7% of North and South Indian adult populaces are ostentatious with Chronic Kidney Disease.^[2] The elementary treatments delineated in these cases were Hemodialysis. Hemodialysis is the standard procedure used to treat advanced and permanent kidney failure, Consuming ethical foods like the restricted amount of fluids, Potassium, Phosphorus, Salt, and Protein as per dietitian guideline aids to enhance dialysis.^[3]

CASE REPORT 1: INSULIN DEPENDENT DIABETES MELLITUS INDUCED CKD

A 47 years old male patient came for consequent review for dialysis. The patient had a previous medical history of type-1 Diabetes mellitus for the past 7 years and CKD for the past 5 months. On examination, the subject was conscious, fatigue, anemic, febrile. On physical examination Pulse rate and blood pressure were found to be elevated. His lab investigation report reveals an elevated level of urea. The patient was married, alcoholic, and consumes 2 pegs a day, his sleep habits were abnormal, decreased appetite, lives in low socio-economic status, illiterate, and leads a sedentary lifestyle.

CASE REPORT 2: HYPERTENSION INDUCED CKD

A 41 years male patient gets a consequent review for dialysis. The patient has a previous history of AV fistula for the past 5 years and chronic kidney disease for the past 6 years. The patient was a known case of Hypertension for the past 8 years and on medication (Amlodipine). On examination the patient was conscious, oriented, and afebrile. On physical examination Edema was found to be positive, Respiratory rate was found to be low and Blood pressure, Pulse rate was found to be elevated and rest of vitals seems to be normal. On systemic examination, he had edema on his left upper extremities. The patient was married, non-alcoholic, non-smoker and on a mixed diet, leads a normal lifestyle. As the patient is a known case of Hypertension and CKD, he was on regular dialysis with AV-fistula for the past 5 years. Autogenous arteriovenous or AV fistula (AVF) is a category of vascular approach that necessitates a direct relation between the artery and vein.^[4] Successful dialysis depends on good functioning vascular access, If the infection gets it easily spreads through the bloodstream and causes infection of organs.^[5] Complications of fistula include Thrombosis, Stenosis, Steal syndrome, Aneurysm, Congestive heart failure.^[6] The patient's complications in figure. 1.



Figure. 1.

CASE REPORT 3: TRAMADOL HYDROCHLORIDE INDUCED CKD

A 68 years old male patient came for review for dialysis. The patient was a known case of Hypertension for the past 3 years and on medication (Amlodipine), On examination, the patient was conscious, oriented, afebrile. On physical examination, the patient was presented with pedal edema, Respiratory rate was found to be low and Blood pressure, Pulse rate was found to be elevated and rest of vitals seems to be normal. The patient had a previous history of back pain; he consumed tramadol hydrochloride. The patient is married, non-alcoholic, smokiest for 3 years, decreased appetite, and leads a sedentary lifestyle.

DISCUSSION

Chronic kidney disease is a restrained loss of conventional kidney function anticipated to a diversity of assorted influences. The most common symptoms of the disease include weakness, tiredness, Itching, loss of appetite, weight loss, nausea, swollen ankles.^[7] The elementary treatment delineated in these cases was Hemodialysis endorsed twice a week. The pre and post dialysis patient vitals of these 3 cases was represented in table 1. Complications of Dialysis include Stenosis, Thrombosis, Fluid Imbalance, Hypertension, Anemia, Bone, and joint diseases, Vascular and extra-articular calcification, Cardiac Disease, Neuropathy.^[8]

In case report 1, the patient is severely anemic, Anemia in CKD is familiarly normocytic, normochromic, hypo proliferative, and overriding genesis of anemia in CKD is due to Erythropoietin deficiency.^[9] Diabetes mellitus is a predominant cause of CKD and the patient is advised for hemodialysis twice a week. The collision of diabetes mellitus on renal parenchyma in prompt phases of the disease, the National Kidney Foundation's Kidney dialysis Outcomes Quality initiative Clinical Practice guidelines and Clinical Practice Guidelines and Clinical Practice Recommendations for Diabetes and CKD now promote the term "Diabetic Kidney Disease" as a non-protein uric labeled of CKD in type 1 or type 2

diabetes.^[10] DKD will occur in 30-40% of people with diabetes and one-third of these individuals may develop kidney failure.^[11]

In case report 2. Hypertension may be the etiological genesis of chronic kidney failure because elevated blood pressure progresses undeniably arise throughout the trajectory of disease.^[12] In Hypertension induces CKD, Hypertension distinguished by triggering glomerular hypertension and also by the loss of auto-regulation of afferent arterioles due to chronic hypertension which leads to glomerular hyperfusion and hyperfiltration these increases oxygen utilization causing renal tissue hypoxia influencing dropping of renal function.^[13]

In Case report 3. Irrational inlet of Tramadol Hydrochloride is the precipitating factor of CKD.

Tramadol is a centrally acting synthetic opioid analgesic agent, used parentally and orally for the treatment of moderate to severe pain.^[14,15] Tramadol is entirely absorbed following oral(>90%), rectal, and intramuscular administration.^[16] The drug wellsprings side-effects of drug dependence, kidney and liver toxicity and It were tested between 50 male singles with tramadol pervert issue in Gaza Strip and originated elevated level of Aspartate aminotransferase (AST), alkaline phosphate (ALP), Alanine aminotransferase (ALT), Alkaline phosphatase (ALP), Lactate dehydrogenase, Bilirubin, Uric acid, Creatinine, Blood Urea Nitrogen (BUN), Gaza strip reports indicate the probability of renal and hepatic destruction owing to the wield of tramadol.^[17] Significant drug interaction escorted by tramadol with other drugs Anti-coagulants, Anti-depressants, Anti-epileptics, Anti-viral, Atomoxetine, Dopaminergic, Sodiumoxybate.^[18] Usually, analgesics influence renal medulla.^[19] 30% Of tramadol excreted via kidney as a stable molecule, frequent intake may steer to the aggregation of toxic metabolite's, which in turn elevate the chance of toxic kinetics or drop the clearance of tramadol probably these increases the potential toxicity and thus recast intraglomerular hemodynamics, tubular cell toxicity, rhabdomyolysis and thrombotic microangiopathy.^[20,21,22,23]

Table 1.

PRE DIALYSIS	POST DIALYSIS
CASE 1	
WEIGHT : 59Kgs	WEIGHT : 56Kgs
WEIGHT GAIN : 1.5kgs	WEIGHT LOSS : 2kg
BLOOD PRESSURE :130/90 mm/Hg	BLOOD PRESSURE : 120/85 mm/Hg
PULSE: 74/min	PULSE: 71/min
TEMP : 98.4 F	TEMP : 98.2 F
CASE 2	
WEIGHT : 64kgs	WEIGHT : 63kgs
WEIGHT GAIN : 2.2kgs	WEIGHT LOSS : 1kg
BLOOD PRESSURE :180/100 mm/Hg	BLOOD PRESSURE : 170/95 mm/Hg
PULSE: 80/min	PULSE: 76/min
TEMP : 98.4 F	TEMP : 98.2 F
CASE 3	
WEIGHT : 60.1kgs	WEIGHT : 58.2kgs
WEIGHT GAIN : 2kgs	WEIGHT LOSS : 2kg
BLOOD PRESSURE :167/72 mm/Hg	BLOOD PRESSURE : 152/76 mm/Hg
PULSE: 82/min	PULSE: 80/min
TEMP : 98.4 F	TEMP : 98.2 F

Hemodialysis care

- Observe weight before and after hemodialysis, maintain a weight chart so to ensure fluids are flushed out and entered inside the body.
- Monitor vital signs ½ after your hemodialysis procedure initiation.
- Proper hygiene must be maintained till the hemodialysis procedure.
- The composition of hemodialysis are
- Sodium = 136 – 140 mEq /l
- Chloride = 99 – 110 mEq /l
- Potassium = 0 – 4 mEq /l
- Calcium = 2.5 mEq /l
- Magnesium = 0.5 – 1 mEq /l
- Acetate = 2.5 – 5 mEq /l
- HCO₃ = 27 – 39 mEq /l
- Glucose = 200 mg /dl

The process of hemodialysis is carried out in the patient with CKD twice a week.^[24,25]

CONCLUSION

The patient is educated with counseling sessions which include points regarding the disease, treatment, and lifestyle modifications, Specialized care on the change of patient lifestyle and personal habits were concentrated and advised properly to the patient and directed to avoid the herbal products Siddha, Ayurveda medications which increase the risk of the present condition. Personalized nutritional plans are encouraged to the patients. Early Detection and management, Pre Dialysis, Body access, Home dialysis, Facility-based Dialysis can ameliorate the condition. Pharmacists have an essential role in analyzing a case study of patients and result in excellent outcomes for patients and to improve motility and mortality of life.

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