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Case Report

Clinical case report: Chronic kidney disease and ESKD (End stage kidney disease)

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ABSTRACT

Introduction: Chronic kidney disease include fibrosis, loss of renal cells and infiltration of renal tissue by monocytes and macrophages. The pathophysiology may include protein uria, hypoxia and excessive angiotensive II production. Hypoxia also contributes to disease progression. The disease has a vast number of clinical manifestations which include abnormalities in laboratory tests, hypertension, fatigue and poor appetite. There are five stages of CKD and in stage 5 the full blown clinical manifestations of end -stage renal disease are evident.
Medical this disease can be managed by:
1. Controlling blood pressure. 2. Managing blood glucose level to maintain HbA1c below 7%. 3. Managing hyperlipidemia with diet and cholesterol lowering drugs. 3. Managing and treating emerging manifestations of renal failure. 4. Prepare clients for renal replacement therapy when necessary.
Conclusion: Patients condition (general condition) was fair, GCS 15/15,but had ineffective coping strategies, he was very much worried about his condition & renal transplant. He was not satisfied about the treatment received. Doctors have planned to discharge him till they arrange a donor for kidney.

1. Introduction

1.1. Biographic information

1.1.1. Health History

2. Type of family

Nuclear

2.1. Family medical history

Father of the patient is hypertensive and mother is having hypothyroidism. There is no history of diabetes or any other chronic disease within the family.

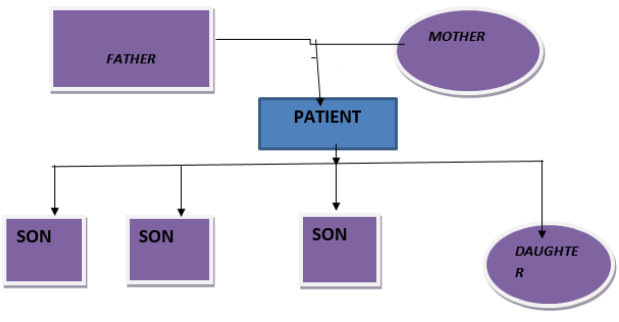

Fig. 1: Family tree

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Table 1: Demographic data

Name:	XXXXX
Age:	55 year
Sex:	Male
Address:	xxxxxx
Religion:	xxxxx
Education:	Nil
Occupation:	Businessman
Mrd no:	1212454
Ward:	Nephrology
Unit:	Hemodialysis
Date of admission:	————
Marital status:	Married
Source of information:	Patient and health records (case sheet)
Diagnosis:	CKD- ESRD
Head of the unit:	————
Blood Group:	AB+ve

2.2. Health practices

As patient belongs to the middle class and educated family, there is no misconception or superstition related to the course of any disease. They avail health facilities to some extent.

3. Persoal History

1. Life style habits and beliefs: Ex-smoker and believes in diet control
2. History of any allergy: Not significant
3. Activity: Severe impairment in daily routine activity, fatigue on exertion
4. Cognition: No cognitive impairment
5. Rest and sleep: Decreased sleep
6. Self-perception: Patient is aware about his disease condition
7. Coping stress: Good coping strategy

3.1. Details of milestones and development

Normal mental and physical growth

3.2. Socio-economic status

Belongs to the middle class and educated family, well satisfied, happy and having good interpersonal relationship with others.

4. Dietary History

Both vegetarian and non-vegetarian

5. Environmental History

1. Housing Pattern: Pucca house and well ventilated

Table 2: One day menu consists of

Timing	**Menu**
Morning	1 cup tea + 1 bread
Mid-Morning	Nil
Lunch	Rice with vegetables(1/2 plate) inadequate amount
Evening	1 cup tea +1 bread
Dinner	Rice with vegetables (inadequate amount)

2. Waste /Excreta disposal:Closed, use of dustbins and dumping
3. Drinking Water Supply: Tap water
4. Environmental Sanitation: Adequate

5.1. Physical examination

1. Mental Status: Conscious, oriented to time, place and person
2. Body Development: Weak
3. Height and Posture: 5 ft 5” Straight and erect posture
4. Weight: 75kgs
5. Hygienic condition: Fair
6. Vital Signs: B P 160/90mmhg, Temp 990F, Respiration 18 breaths /min, Pulse 80/min
7. Skin: Normal texture but looks shiny, pitting type edema on feet. Skin color is pale.
8. Head: Hair clean no tangles & pediculosis. Head is normal in shape no deformity noticed.

Table 3: Eyes

Eye Brows	Symmetrical
Eye Lashes	Normal in position
Eye lids	Edematous
Conjunctiva	Pale
Pupils	Normal size reacting to light
Vision	Normal

Table 4: Ears

External ears:	No discharge
Alignment:	Symmetrical
Hearing Acquity:	Normal

5.2. Signs & symptoms

5.3. Nose

External Nares: No discharge, no nasal flaring

5.4. Nostrils and septum/bridge

No discharge and no inflammation or any DNS.

Table 5: Mouth

Lips:	Bluish (cyanosis) and dry
Tongue:	Dry
Gums:	Normal with no any bleeding and gingivitis
Teeth	No missing teeth but caries present.

Table 6: Laboratory investigations

S.no	Test	Patients value	Normal range	Remarks
1	CBC			
	Hb	6.4gm/dl	12-14gm/dl	Decreased
	WBC'S	10.5	4.8-10.0	Increased
	RBC'S	$3.0*10^6$ul	3.5-5.2	Decreased
	PLATELETS	$170*10^3$/ul	140-440*10ul	Normal
	MCV	82.8	75.0-95.0	Normal
	HCT	35.2	35-47	Normal
2	KFT			
	Urea	184mg/dl	10-20mg/dl	Increased
	Creatinine	15.02mg/dl	0.5-1.5mg/dl	Increased
3	LFT			
	Bilirubin	1.8mg/dl	0.5-1.0mg/dl	Increased
	AST	22U/L	15-30U/L	Normal
	ALT	20U/L	10-35U/ml	Normal
	ALP	80U/L	50-120U/L	Normal
	Protein	4.2mg/dl	6-8gm/dl	Decreased
	Albumin	2.7mg/dl	4.5-5.5gm/dl	Decreased
	Blood Sugar	97mg/dl		
4	Electrolytes			
	PH	7.35	7.35-7.45	Normal
	Na	139meq/l	135-145meq/l	Normal
	K	9.23meq/l	3.5-4.5meq/l	Increased
	HCO_3	20		
	PO_2	90%	90-100%	Normal
	PCO_2	40	35-45	Normal
5	Urine Analysis			
	Color	Yellowish		
	Albumin	Traces		
	Sugar	Nil		
	Pus cells	12-18		
	Erythrocytes	24-30		
	Ca oxalates	A few		
7	Serology			
	HbSAg	Non-Reactive		
	HCV	Non-Reactive		
	HIV	Non-Reactive		

Table 7: Stages of CKD

Stages	Description	GFR: ml/min/1.73m^2
1	Slight kidney damage with normal or increased filtration.	_> 90
2	Mild decrease in kidney function	60-89
3	Moderate decrease	30-59
4	Severe decrease	15-29
5	Kidney failure	Less than 15

Table 17: Drug Chart

Name of the drug	Action	Dosage& Route	Indications	Side effects	Contraindications	Nurses responsibility
Furosemide (Lasix)	Diuretic Inhibits the reabsorption of Na & Cl, acts on loop of Henle and DCT.Increases excretion of water,Na,Cl,K,Mg and calcium.It also decreases B.P.	20mg or 40mg Oral/ IV	Hypertension, Edema, Heart failure,Renal disease and hepatic impairment.	CNS- blurred vision,headache, dizziness, vertigo. ENT-tinnitus, hearing loss. CV-hypotension. GU-excessive urination and others like fluid & electrolyte imbalance.	Hypersensitivity Severe hypotension, hepatic coma, anuria,not indicated in alcohol intolerance.	Asses fluid status, check B.P & pulse before giving Lasix. Notify physician if anuria occurs. Caution patient to change position slowly to minimize orthostatic hypotension. Advice the patient contact doctor immediately if weakness,cramps, nausea, dizziness occurs.
Nifedipine	Antihypertensive agent that inhibits Ca ion movement across cell Action membranes, Depressing contraction of cardiac & vascular smooth muscles. Thus decreases blood pressure.	10mg Oral Dosage & route	Hypertension And Indications chronic stable angina.	Hypotension, peripheral edema, dizziness, Side effects nausea, dyspnea.	Severe hypotension	Administer it early in the morning. Nurses responsibility Do not crush or chew sustained release dosage forms.
Pantoprazole and Domperidone	Proton pump inhibitor and decreases the secretion of HCl. Domperidone is a dopamine-receptor blocking agent.Its action on the dopamine receptors in the chemo-emetic trigger zone produces an anti-emetic effect.	40mg Oral	Peptic ulcer, NSAID associated peptic ulcer.Zollingers Ellison syndrome. Gastro-esophageal reflux.	Headache, Insomnia, confusionDiarrhea, abdominal pain. Urticariaor rash, Abdominal cramps ,coated tongue etc.	Hypersensitivity to drug and lactation. Hypotension	Administer it an empty stomach. Check for any side effects and inform physician whenever necessary. Check for hypotension.
Predicort (prednisolone)	Steroid	20 mg Oral	In immuno –compromised patients, Edema, rheumatic diseases, cancers, inflammatory conditions.	Gastric irritation, Masculine features.	In gastric/ peptic ulcers, Ca stomach etc.	Should not be stopped abruptly but should be tapped and should be given not without H2 blocker.

Table 18: Summary of patients daily progress report

Date & time	Temperature	Pulse	Respiration	Blood Pressure in mmHg	Summary/ Nurses Notes
16/3/2021 10AM	98^0F	80/Min	22/min	150/90	General condition of the patient is fair,patientconscious.oriented& GCS 15/15.Medications given and I/O chart maintained.
17/3/2021 10AM	98.2^0F	88/min	20/min	160/100	Patient's condition stable,B.P on higher side, due drugs given and intake output chart maintained.
18/3/2021 10AM	98.6^0F	90/min	18/min	146/100	Patient remained stable Hemodynamically. All vital signs are within normal range.
19/3/2021 10AM	99^0F	98/min	22/min	160/90	Patient is conscious, well oriented and responding to verbal commands. Due drugs given.

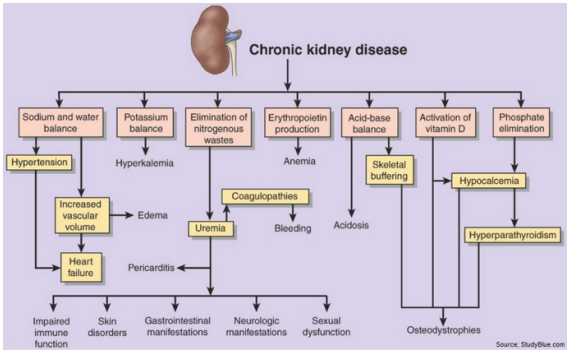

Fig. 2: Chronic kidney diasease.

Table 8: Neurological

According to Book	According to Patient
Weakness and fatigue	Present
Inability to concentrate	Present
Confusion	Absent
Restlessness or weakness of legs	Present
Seizures	Absent
Behavioral changes	Present
Burning feet(sole of feet)	Absent

Table 9: Integumentary

According to book	According to patient
Dry,flaky and shiny skin	Present
Thin & brittle nails	Absent
Thin hair	Absent

Table 10: Cardiovascular

According to book	According to patient
Hypertension	Present
Pitting edema	Present
Periorbital edema	Present

Table 11: Respiratory or pulmonary

According to book	According to patient
Tachypnea	Present
Shortness of breath/shallow breath	Present
Acetone breath smell	Present
Kussmaul type respiration	Present

Table 12: Gastro intestinal

According to book	According to patient
Anorexia, nausea and vomiting	Present
Metallic taste	Absent

Table 13: Hematological

According to book	According to patient
Anemia	Present

Table 14: Genito urinary

According to book	According to patient
Changes in urine output	Present
Infertility	Absent
Testicular Atrophy	Absent

Table 19: Nursing process

Assessment	Nursing diagnosis	Objectives	Interventions	Rationale	Evaluation
Subjective data: Patient says that he is having loss of appetite. Objective data: Patient looks very weak & is not taking enough food as he is supposed to.	Imbalanced nutrition less than body requirements related to anorexia, nausea& vomiting.	Improve the nutritional status of patient.	Assess the nutritional status of the patient; lab investigations. Provide food in small amounts but at frequent intervals. Provide patients food preferences within dietary restrictions. Educate the patient & relatives regarding importance of food & balanced diet.	Baseline data allow for monitoring of changes and evaluating effectiveness of interventions. Increased dietary intake is encouraged.	Positive improvement in nutritional status.
Subjective data: Patient saysthat he is unable to perform ADL. Objective data: Patient looks very tired, pale, lethargic& was on dialysis.	Activity intolerance related to fatigue, anemia and dialysis procedure.	Enable the patient to perform his daily living activities. Provide assistance to the patient. Minimize the fatigue.	Assess factors contributing to fatigue, fluid & electrolyte imbalance Promote independence in self-care activities as tolerated. Encourage alternating activity with rest. Encourage the patient to take rest after dialysis.	Indicates factors contributing to severity of fatigue i.e. fluid & electrolyte imbalance. Promotesself-esteem. Promotes relaxation& comfort Prevents undue exertion & relieves stress.	Patient participated in some activities of daily living.
Assessment	**Nursing Diagosis**	**Objectives**	**Interventions**	**Rationale**	**Evaluation**
Subjective data: Patient complains of swelling in hands and feet. Objective Data: On palpation, pitting edema is seen on feet.	Excess fluid volume related to decreased urine output and retention of other waste products.	Maintain fluid volume status within established parameters.	1.Assess the weight, assess extremities for presence of edema. 2.Monitor intake and output. Monitor vital signs and B.P. 4.Limit fluid intake to prescribed volume. 5.Encourage frequent oral hygiene. 6.Explain the patient & family about the importance of fluid restriction	Assessment provides baseline & ongoing database for monitoring changes and evaluating the outcome. Fluid restriction will be determined on the basis of weight, urine output and response to therapy. Oral hygiene reduces the dryness of oral mucus membrane. Explanation promotes patients cooperation with fluid restriction.	Edema lessen to some extent.

Table 19 Cont..

Assesment	Nursingdiagnosis	Objective	Interventions	Rationale	Evaluation
Subjective data: Patientis complaining of headache.	Headache related to increased blood pressure(hypertension)	Relieve the headache by diverting attention of patient.	Assess the level of pain due to headache.	This may help to distract the patient from disturbedthoughts.	B.P is within normal limits.
Objective data: Patient is very irritable & restless. Blood pressure is 160/90			2.Provide diversion therapy by engaging the patient in verbalization and for Watching TV.	-Increased activity may aggravate pain.	
			Provide comfortable position.	Diet & drugs have an utmost importance in controlling hypertension.	
			Encourage compliance with dietary regimen and anti-hypertensive drugs as prescribed.		
			Inform the patient to report signs of fluid overload, vision changes,seizures.		
			Administer drugs as prescribed.		
Subjective data: Patient says, “I am fed-up with this disease & dialysis”.	Deficient knowledge regarding disease and treatment.	Educate the patient about the disease, importance of dialysis and make him able to take care of himself.	Provide explanation of renal function, condition of disease and treatment regime.	An environment of mutual understanding can enhance the learning process. Participation in self-care assists the patient to gain a sense of dignity &feeling of self-worthy.	Verbalize to make adjustments in lifestyles.
Objective data: Patient has apprehensions related to CKD,HTN and Dialysis.			Establish rapport with the patient and family and clear their all doubts related to renal transplant.		
			Verbalize plans to continue as normal life as possible and identify patients coping strategies.		

Table 20: Wholly compensatory system

Nurses Action	Patient had uncontrollable high blood pressure, So I administered diuretics as prescribed.	Patients action is limited
	Maintained intake output chart of my patient, checked vital signs.	

Table 21: Partially compensatory system

Nurses Action	Assisted patient in performing various self-care activities. Assisted him in ambulation. Checked his vital signs. Patient is able to perform self-care activities like brushing teeth. Patient shows concern regarding intake of medicines at prescribed time and is now taking the medications himself(orally).	Patient action

Table 22: Supportive education system

Nurses Action	Educated the patient to take low sodium diet. Educated him about the importance of balancing rest and activity periods. Elevated the head end of bed to provide comfort to patient. Advised him to take medicines on time. Advised him to be regular for dialysis and follow up checkups.	Patient is taking all medication and is following the said advice.

Table 15: Musculoskeletal system

According to book	According to patient
Muscle cramps	Present
Bone pain	Absent
Loss of muscle strength	Present
Fractures	Absent
Joint pain	Present

Table 16: Complications

According to the Book	According to patient
Hyperkalemia	Present
Anemia	Present
Hypertension	Present
Pericarditis	Absent
Pericardial effusion &tamponade	Absent
Bone disease	Absent

5.5. Neck

Thyroid and lymph nodes: Normal, no enlargement noticed

5.6. Systemic physical examination

1. CNS: Patient conscious, oriented and responding to verbal commands.GCS 15/15 $E_4V_5M_6$
2. Cardio vascular system: Pulse: Normal rate and rhythm(85b/min).
   a. S_1S_2: ++ and no murmur
   b. B.P: 160/90 mmHg
3. Respiratory system: Respiratory rate 20b/min, B/L air entry Normal, No crepts/wheeze.
4. Gastrointestinal system: P/A soft, Non tender with active bowel sounds, slightly distended & having anorexia.
5. Genitourinary system: Oliguria. Urine is pale yellowish in color& not catheterized.
6. Musculoskeletal system: Normal range of motion. Absence of any congenital abnormality. Muscle cramps present. Muscle tone is strong and no muscle atrophy. Pitting edema in feet. Reflexes normal.
7. Motor functions: Motor function is normal and normal cranial function.
8. Integumentary system (skin): Normal skin texture. Skin color pale.
   a. Nails pale in color and not any abnormality seen.
9. Sensory function: Normal sensations to temperature, pain, touch etc.
10. Reflexes: Biceps reflex: Normal, Triceps reflex: Normal, Patellar reflex: Normal, Achilles reflex:, Normal, Deep tendon reflex: Normal

5.7. Specific investigations

1. USG
2. Bone Marrow Aspiration
3. Renal Biopsy reveals chronic sclerosing disease.

Definition, cause and pathophysiology of disease (Patient)

5.8. Definition

Chronic kidney disease or chronic renal disease is a progressive loss of renal function over a period of months or years in which metabolic, fluid and electrolyte balance falls, resulting in uremiaor azotemia. In this the GFR falls below 10% of the normal.[1–5] All individuals with a glomerular filtration rate (GFR)<60ml/min/1.73m^{2}for 3 months are classified as havingchronicrenal disease irrespective of the presence or absence of kidney damage. End-stage renal disease (ESRD) occurs when GFR is less than 15ml/min/m^2.

5.9. Causes

1. Heredity
2. Glomerular dysfunction
3. Cardiovascular disease or cardiovascular risk factors such as Hypertension
4. Poly cystic kidney disease, Glomerular Nephritis, Urinary tract obstruction, Bladder Tumor, Urethral obstruction, Hypertensive nephrosclerosis.
5. Diabetic nephropathy
6. Multi-system disease with potential for kidney involvement
7. Nephrotoxic drugs

5.10. Other causes are

1. HIV infection
2. Recurrent urinary or Kidney stones (> 1 episode per year
3. Chronic kidney infection and certain cancers
4. Vasculitis
5. Regular use of NSAID
6. Vesicoureteral reflux
7. Multiple myeloma

6. Diagnostic Evaluation

History taking, physical assessment,Urine analysis, Blood chemistry, KFT, LFT, serology, ECG, USG, bone marrow aspiration.

7. Pathophysiology

Approximately 1 million nephrons are present in each kidney, which contributes to the total GFR. In the case of renal disease regardless of the etiology the nephron has an innate ability to maintain GFR, despite progressive destruction of nephron by hyper filtration and compensatory hypertrophy.[6–10]

This nephron adaptability allows for continued normal clearance of plasma solutes. Plasma levels of substances i.e. urea & creatinine starts to increase only if total GFR has decreased to 50%, when the renal reserve has been exhausted. The plasma creatinine value will approx. double with 50% reduction in GFR.

In end-stage renal failure or uremia more than 85% loss of nephron occurs, less than 10% of normal GFR, BUN& serum creatinine at high levels. Anemia, azotemia, metabolic acidosis & urine-specific gravity are fixed at 1.010 oliguria & symptoms of renal failure appears. It is at this Stage where most of the patient face much difficulty in carrying out basic activities of daily living because of the cumulative effect and extent of the symptoms.

8. Medical Management

8.1. Pharmacological theraphy

1. Tab Lasix 40 mg OD
2. Tab Nifedipine 10mg BD
3. Tab Pantop D 40 mg BD
4. Tab Predicort 20mg BD

8.2. Nursing diagnosis

1. Impaired nutritional status less than body requirements related to anorexia, nausea & vomiting.
2. Activity intolerance related to fatigue, anemia and dialysis.
3. Excess fluid volume related to decreased urine output and retention of other waste products.
4. Headache related to increased B.P(hypertension).
5. Deficient knowledge regarding disease and treatment.

9. Application of Nursig Theory

I have selected Orem's Nursing System theory for application of nursing process on my patient with CKD-ESRD. The focus of Orem's theory is to enhance patient's ability for self-care. Three systems exist within this model: The Wholly Compensatory in which the nurse provides the total care; The Partially Compensatory in which the patient and nurse share responsibility of care; Supportive educative system in which patient has the primary responsibility for personal health, with the nurse acting as a consultant.

9.1. Discharge teachings/health education

1. Advised him to Limit the intake of protein rich foods such as kidney, brains, meat extracts etc.
2. Advised him to take Low potassium diet & Low salt is also encouraged.
3. Educated to adopt the treatment regimen.
4. Advised him to get plenty of rest and get more sleep at night.
5. Advised him to move around and bend his legs to avoid getting blood clots due to rest for a long period of time.
6. Advised him to keep record of hi daily weights.
7. Instructed to report hospital if any complication arises.
8. Advised for regular checkup of BP and blood sugar.
9. Advised the patient for maintenance hemodialysis.
10. Assisted him to develop effective coping in day to day life.
11. Educated regarding renal transplant and its misconceptions.
12. Instructed the patient to maintain hygiene.
13. Advised for regular follow up services.
14. Adherence to dietary restrictions and prescribed medications.

10. Conclusion

Patients condition (general condition) was fair, GCS 15/15,but had ineffective coping strategies,he was very much worried about his condition & renal transplant. He was not satisfied about the treatment received. Doctors have planned to discharge him till they arrange a donor for kidney.

During case study, health education was provided to patient, checked his vital signs. Monitored blood pressure at regular intervals. Maintained intake output chart. Administered medications as prescribed. Educated the patient and his family regarding maintenance hemodialysis. Advised the patient to come for regular follow- up.

11. Source of Funding

None.

12. Conflict of Interest

None.

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