MEDICAL/SURGICAL NURSING CASE STUDY

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 A CASE REPORT OF PATIENT WITH DIABETES MELLITUS

Patient Demographic Data

Name-Santanna Kaumbi

AGE-21 years

IP NO-276273

D.O.A-15th /01/2021

Location-Thugururu

Constituency - Chuka Igamba ngombe

Next of kin- Rosalia Karimi

Tel-0746748166

I met my client upon admission in medical ward after which I asked for consent to follow up for case study purpose which she agreed

REASONS FOR CHOSING MY CLIENT

I chose my client because ;

1. She looked worried upon admission in the medical ward so I had to intervene and relieve the anxiety through teaching on the management.
2. Her condition was chronic which currently has high incidences in our country and following her up would equip me with knowledge and experience in managing the condition.

HISTORY OF THE CLIENT

CHIEF COMPLAIN

Patient was admitted with complains of vomiting, chest pains , abdominal pain,general body weakness and dizziness,blurred vision,inguinal swelling.

HISTORY OF PRESENTING ILLNESS

She came presenting with above complains .started in a period of one week prior hospitalization.she visited a dispensary prior with complains of abdominal pains and foul smelling vaginal discharge where she was given Amoxicillin and vaginal pesarries ,then was referred to Chuka level 5 for further check- up .

PAST MEDICAL HISTORY

Patient has no history of admission but this is her first admission due to diabetes mellitus

Has no history of blood transfusion.

History of chronic illness [Diabetes mellitus] and Hypertension present.

Has no drug or food allergy.

No history of any surgery.

FAMILY SOCIAL HISTORY

She is a teacher househelp

She is fifth born In a family of seven

Has never abused any illegal drug.

She is single.

PHYSICAL EXAMINATION

Head; hair smart and well distributed, no scars

Eyes; no discharge, no jaundice or pallor, no squitdness,clouding present

Ears; no discharge

Nose; no epixtasis, nostrils patent with no polyps

Mouth; presence of acetone breath

Neck; no swollen lymph nodes or gland

Upper arms; equal in size with no extra digits

Abdomen; normal bowel sounds on auscultation

Lower limbs; equal in size, no edema, no fungal infection, nails are short and clean.

VITAL SIGNS ON ADMISSION

Temperature -36.6

Pulse rate-88beat per minute

Blood pressure-144/83mm/hg

Oxygen saturation -91%

Respiratory rate- 20 breaths per minute

Blood sugars-19.4mmol

MANAGEMENT

INSULIN

Soluble insulin 10IU tds ;It is an antidiabetic drug whose indications is control of hyperglycemia in patients with diabetes type one or type two.

M.O.A ;lower blood glucose by stimulating glucose uptake in skeletal muscle and fat ,inhibiting hepatic glucose production .It also acts through inhibition of lipolysis and proteolysis ,enhanced protein synthesis.

PHARMACOKENETICS

Well absorbed from subcutaneous administration sites. widely distributed ,metabolized by liver ,spleen ,kidney and muscle. The drug half-life is 5-6 minute.

CONTRAINDICATIONS

Hypoglycemia ,allergy or hypersensitivity to a particular type of insulin, preservative, or other addictives.

ADVERSE EFFECTS

Hypoglycemic ,erythema, pruritus ,swelling, allergic reactions including anaphylaxis.

Furosemide IV 80 mg ;It is a loop diuretic whose indications include ;edema due to heart failure, hepatic impairment or renal diseases.

M.O.A ;it inhibit the reabsorption of sodium and chloride from loop of henle and diastole renal tubule.

PHARMACOKINETICS;60 TO 67% absorbed after oral and intramascular sites administration ,The drug crosses placenta and enters breast milk. It is minimumilly metabolized by the liver, some non-hepatic metabolized and some renal excretion as pro-drug. Has half-life of 30-60minutes.

CONTRAINDICATIONS

Hypersensitivity ,cross sensitivity with thiazides and sulfonamides may occur, hepatic coma.

ADVERSE EFFECTS

Blurred vision, dizziness ,headache ,vertigo, hearing loss, anorexia, constipation ,diarrhea ,dry mouth ,excessive urination, Stevens john syndrome.

P.O SPIROLACTONE 20MG;It is a diuretic whose indications include ;management of primary hyperaldosteronism ,management of edema ,cirrhosis ,nephrotic syndrome ,management of essential hypertension and treatment of hypokalemia.

M.O.A ;It causes loss of sodium bicarbonate and calcium while saving potassium and hydrogen ions by antagonizing aldosterone.

PHARMACOKINETICS

Well absorbed after oral administration ,it crosses the placenta and enters breast milk .It is converted by the liver to its active diuretic compound and has half-life of 78-84 minutes.

CONTRAINDICATIONS

Hypersensitivity ,anuria ,acute renal insufficienty , significant renal impairement ,hyperkalemia.

ADVERSE EFFECTS

Dizziness, clumsiness ,headache, arrythymiasis ,Gastral intestinal irritation ,erectile dysfuction, dysuria, gynecomastia, breast tenderness, deepening of voice ,hypokalemia ,hyponatremia, Steves johns syndrome, muscle cramps, allergic reactions.

ENALAPRIL 5MG OD ;it is an hypertensive drug whose indications include ;hypertension ,management of symptomatic heart failure, slowed progression of asymptomatic left ventricular dysfunction to overt heart failure and treatment of proteinuria in steroid resistant nephrotic syndrome patients.

M.O.A; Angiotensin-converting enzyme block the conversion of angiotensin 1 to the vasoconstrictor angiotensin 2.The enzyme also prevent the degradation of bradykinin and other vasodilatory prostaglandins.

PHARMACOKINETICS

55-75% IS well absorbed following oral administration. The drug crosses the placenta and small amounts enter breast milk.it is converted by the liver to enalaprit ,the active metabolite primarily eliminated by kidneys and has half-life of 3.5-5.8hours.

CONTRAINDICATIONS

Hypersensitivity ,history of angioedema, can cause injury or death fetus not advisable to lactating mothers.

ADVERSE EFFECTS

Dizziness ,fatigue, headache, vertigo ,weakness, cough, hypontesion, chest pain ,abdominal pain ,diarrhea ,nausea ,vomiting ,proteinuria ,impaired renal function, hyperkalemia, dyspnea ,angioedema.

CEFUROXIME TDS 2G IV;It a second –generation cephalosporins whose indications include treatment of respiratory tract infections ,skin and skin structure infections ,bone and joints infections, urinary tract infection, gynecological infections ,septicemia, otitis media ,meningitis, lyme disease,pre- operative prophylaxis.

M.O.A; It binds to cell wall membrane causing death.

PHARMACOKINETICS

Well absorbed after oral and intramasucular administration results in complete bio-availability .Widely distributed and crosses blood brain barrier following iv administration ,it also crosses the placenta and enters breast milk in low concentrations .It is excreted primarily unchanged in the urine.

CONTRAINDICATIONS

Hypersensitivity to cephalosporins, serious hypersensitivity to penicillin’s.

Use cautiously to patients with renal impairment, history of gastral intestinal diseases.

ADVERSE EFFECTS

Seizures ,pseudomembranous colitis, diarrhea ,nausea ,vomiting ,cramps ,rashes ,diaper dermatitis ,bleeding eosinophilia ,hemolytic anemia ,leukopenia, pain at the intramuscular site, phlebilitis at iv site ,allergic reactions including anaphylaxis.

INVESTIGATIONS AND DIAGNOSTIC ASSESSMENT

Imaging ordered: electrocardiogram.

Investigations ordered : Urinalysis, Urea, electrolytes and Creatinine

**NURSING CARE PLAN**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Date/time | assessment | Nursing diagnoses | Goal and outcome | Nursing intervension | rationale | implementation | evaluation |
| 9.00am | Anxiety | Anxiety related to deficient knowledge regarding disease process ,treatment and individual care needs related to insufficient knowledge about the information | Participate in learning process | Determine the client readiness to learn as well as bariers to learning | To relieve anxiety | Health talk given | Anxiety relieved |
| 3pm | Patient verbalized to be thirst and general body weakness | Fluid volume deficit related to osmotic diuresis from hyperglycaemia as evidenced by patient feeling thirsty | After 8hrs of intervention patient will report adequate hydration | To Maintain fluid intake atleast 2500ml daily with cardiac tolerance | To increasing skin tugor  | Iv fluids administered as prescribed | Feeling of thirst improved |
| 9pm | Hyperglycemia | Risk of blood glucose being unstable as evidenced by inadequate glucose monitoring practices as evidenced by blood glucose being above normal | To Identify factors that may lead to unstable glucose levels | To determine client awareness or ability to be responsible for their own care plans | To Monitor blood sugar | Monitoring RBS and FBS of the client initiated | Glucose level stable |

 LITERATURE REVIEW

DIABETES MELLITUS

Definition

Diabetes mellitus is a chronic disease caused by inherited or acquired deficiency in production of insulin by the pancreas or by the ineffectiveness of the insulin produced. Such deficiency results in increased concentrations of glucose in the blood, which in turn damage many of the body’s systems in particular blood vessels and nerves

Risk Factors for diabetes mellitus

* Family history of diabetes.
* Obesity.
* Race/ethnicity (African Americans).
* Age>45 years of age.
* Previously identified impaired glucose tolerance test (IGT)
* Hypertension.
* HDL levels <0.90 mmol/l
* History of gestational diabetes.

Types of diabetes

Type 1 DM

Is a chronic condition in which the pancreas produces little or no insulin. Usually characterized by destruction of pancreatic beta cells. Combined genetic, immunologic and environmental factors are thought to contribute to beta cell destruction. There is evidence of autoimmune response in diabetes type 1;this is an abnormal response in which antibodies are directed towards the islet cells and endogenous insulin. the destruction of the beta cells results in decreased insulin production, unchecked glucose production by the liver, and fasting hyperglycemia

Type 2 DM

 The two main problems related to insulin in type 2 diabetes are insulin resistance and impaired insulin secretion. To overcome insulin resistance and to prevent the buildup of glucose in the blood, increased amounts of insulin must be secreted to maintain the glucose level at a normal or slightly elevated level This is called metabolic syndrome, which includes hypertension, hypercholesterolemia, and abdominal obesity. However if the beta cells cannot keep up with the increased need for insulin glucose level rises and diabetes mellitus type 2 develops

Gestational diabetes

Is any degree of glucose intolerance with its onset during pregnancy. Hyperglycemia develops during pregnancy because of secretion of placental hormones which causes insulin resistance. Women who are considered to be at high risk of gestational diabetes and who should be screened by blood glucose testing in their first prenatal visit include those with marked obesity, strong family history of diabetes, glycosuria or personal history of GDM. After delivery glucose levels usually return to normal. However, many women develop diabetes mellitus type 2 later in life.

Epidemiology

Blacks are 1.7 times as likely to develop diabetes as whites. The incidences of both type 1 and type 2 diabetes are rising. It is estimated that in the year 2000, 171 million had diabetes and this is expected to double 2030. Type 1 diabetes is more common in Caucasian populations.

Pathophysiology

In type 1 diabetes mellitus, the autoimmune destruction of pancreatic beta cells leads to deficiency of insulin secretion. Severe insulin deficiency is associated with metabolic syndrome. Hyperglycemia leads to glycosuria and dehydration. Unrestrained lipolysis and proteolysis result in weight loss, increased gluconeogenesis and ketogenesis. Ketoacidosis occurs when generation of ketone bodies exceeds the capacity for their metabolism. Usually manifested by hyperglycemic symptoms such as polydipsia, polyuria, nocturia, fatigue, infections and weight loss.

In type 2 diabetes mellitus, there is a relative deficiency of insulin and not absolute deficiency .This means that the body is unable to produce adequate insulin to meet the needs. There is beta cell deficiency coupled with peripheral insulin resistance. Features of the insulin resistance includes: hyperinsulinemia, hypertension, low HDL cholesterol, visceral obesity, micro albuminuria, impaired glucose tolerance.

Clinical manifestations

* Polydipsia due to high blood glucose that raises the osmolarity of blood and makes it more concentrated.
* Polyuria due to excess fluid intake and glucose induced urination.
* Weight loss occurs due to loss of calories in urine.
* Polyphagia or increased hunger due to loss of excess glucose in urine that leads the body to crave for more glucose.
* Poor wound healing, gum and other infections due to increased blood glucose providing a good source of nutrition to microbes and due to diminished immunity.
* Nerve damage, this can affect the arms and legs and is called stocking glove numbness/tingling.
* Eye damage, this is termed diabetic retinopathy and occurs due to damage of the fine blood vessels of the retina in the eye.

Diagnosis of diabetes mellitus

1. Random blood glucose level equal to or greater than 11.1 mmol/l with classic symptoms of diabetes that include polyuria, polydipsia, weight loss, blurred vision and fatigue.
2. Fasting plasma glucose greater than or equal to 7.0 mmol/l. Fasting is defined as no caloric intake for at least 8 hours
3. Two-hour post load glucose equal to or greater than 11.1mmol/l during an oral glucose tolerance test. The test should be performed using a glucose load containing the equivalent of 75g anhydrous glucose dissolved in water.

MANAGEMENT OF DIABETES MELLITUS

Dietary management

 Should aim at ensuring weight control, providing nutritional requirements, allowing good glycemic control, correcting any associated blood lipid abnormalities.

Cholesterol consumption should be restricted and limited. Protein intake derived from both vegetable and animal sources. Excessive salt intake is to be avoided. Artificial sweeteners are to be used in moderation. Alcohol tends to increase the risk of hypoglycemia in those taking anti diabetic drugs and should be avoided in those with lipid abnormalities.

Drug treatment

Oral hypoglycemic agents are considered only after a regimen of dietary treatment combined with exercise has failed to achieve the therapy targets set. Two major groups of oral hypoglycemic agents are sulphonyureasA and biguanides.Sulphonyureas act by stimulating insulin release from the beta cells. Biguanides exert their action by decreasing gluconeogenesis and by increasing peripheral utilization of glucose. Sulphonyureas preparations include Glibenclamide, Tolbutamide. Biguanide preparation include metformin.

Insulin. Majority of patients will require more than one daily injection if good glycemic control is to be achieved. Twice-daily-mixtures of short- and intermediate-acting insulin are a commonly used regimen. A regimen of multiple injections of short-acting insulin before the main meals, with appropriate dose of an intermediate-acting insulin given at bedtime, may be used particularly when strict glycemic control is mandatory.Sulphonyureas may be combined with metformin when therapy targets are not achieved with either drug alone.

 NURSING MANAGEMENT

* Educate patient on the type of diet to consume
* Educate the patient on need for regular exercises
* Monitor glucose levels
* Educate on complications of diabetes mellitus
* Teach on self administration of insulin

COMPLICATIONS OF DIABETES MELLITUS

The complications of Diabetes can be classified as:

* Acute problems (Diabetic medical emergencies)

-Diabetic ketoacidosis (DKA).

* Chronic complications of diabetes mellitus

-Micro vascular complications

 -Macro vascular complications

ACUTE COMPLICATIONS OF DIABETES

Diabetic ketoacidosis (DKA)

DKA is a life threatening complication of diabetes that occurs when the body produces high levels of blood acids called ketone bodies. Condition develops when the body can’t produce enough insulin. Without insulin body begins to breakdown fat as fuel. This process produces a buildup of acids in the bloodstream called ketones leading to ketoacidosis. DKA is a medical emergency and requires immediate management within the first hour.

A diagnostic criterion for DKA includes:

* Blood glucose level>13.9mmol/l
* Arterial PH<7.3
* Serum bicarbonate level<15mEq/l
* Moderate ketonuria and ketonemia

The three main clinical features of DKA are: Hyperglycemia, Dehydration and electrolyte loss, Acidosis. Management of DKA entails: Rehydration, Restoring electrolytes and correction of acidosis.

THE CHRONIC COMPLICATIONS OF DIABETES

These are the complications that occur because of the chronic exposure of body’s tissues to hyperglycemia, hypoinsulinemia or their associated metabolic disturbances. Chronic complications of diabetes are classified as follows:

MICROVASCULAR (microangiopathic)

* Diabetic retinopathy
* Diabetic neuropathy
* Diabetic nephropathy
* Diabetic skin problems (“diabetic foot”)

MACROVASCULAR

Accelerated propensity to atherosclerosis/atheroma

* Peripheral vascular disease/coronary heart disease
* Myocardial infarction

Arteriosclerosis

* Hypertension and cerebrovascular disease

OTHER ASSOCIATED METABOLIC DISTURBANCES

* Hypercholesterolemia

HEALTH MESSENGES BEFORE DISCHARGE

\*Maintainance of normal body weight through exercises

\*Following health diet and diatary changes known to be effective include;a diet rich in whole grains and fibre,limiting sugarly beverages and eating less red meat and other sources of saturated fat,chosing good fats such as polyunsaturated fats found in nuts,vegetables oils and fish.

\*Not to draw attention to smoking beacause active smoking is also associated with increased risk to diabetes

\*Teach on self admnistrstion of insulin

\*Advince on adherence to medical out-patient clinic for random blood sugar text and other medical advises

\*To avoid activities which may predispose him to injuries to prevent wounds such as diabetic foot which is difficult to treat

FOLLOW UP AT HOME

FIRST HOME VISITING

Date;25-02-2021

Time;11:30pm

Objectives:

* To familiarize myself with the family members.
* To take relevant family history
* Indentify needs and health problems of the family.

It was on Sunday afternoon when I called Kaumbii and informed her my home visiting will be due on date 23 february.Following the directions she gave me I mananged to arrive at her home.on arrival I was warmly welcomed by the family members amongst with them miss Santanna Kaumbi. I Introduce myself to all the family members as a student nurse from chuka mtc and my interest for home visiting as to know where madam Kaumbi whom I had indentified as my client comes from and continue with guidance on how to manange her condition diabetes mellitus.

The main source of income in the family was agricultural practices. They lived in one acre piece of land farming maize, beans and vegetables .They are livestock and poultry keepers where by they keep goats, cows, sheeps and chickens.

There house is a permanent owned house which looked clean and tidy on assesment .There main source of energy for cooking was firewood ,charcoal and gas. They use common pit latrine and bathrooms which are both clean.

Before leaving the household ,I reminded her to continue with the drug therapy as prescribed, I also thanked the family members for a warm welcome and informed them come mid March I will still re-vesit them a statement which made them so happy. They escorted me and I left.

SECOND HOME VISITING

DATE 12 march 2021

TIME;3:30PM

OBJECTIVES:

* To health educate her on relevant health messages
* How to cope with the condition
* How important it is to take medications

I arrived at Kaumbi's home at 3 :30pm and found her with family members who welcomed me and appreciated me for the help and sacrifice am doing to one of them .I inquired about her progress and he said she was fine .i began my teachings on the things to adhere to and live a quality life.

* Control blood pressure
* Exercise regularly
* Continue with medications as prescribed especially administration of mixstand
* Specialised foot wear to reduce risk ulceration
* Limit consumptions of sugary things
* Eat diet rich in fibre

HOW TO COPE WITH DIABETES MELLITUS

* Adhere to drugs therapy as prescribed
* Attend medical out patience clinic for random blood sugar monitoring
* Eliminate triggers of high blood sugar in the lifestyle

MEDICAL HISTORY OF THE FAMILY

There are no cases of accidents in the family nor anybody else with a medical problem . Mr Martin condition has made all other family members suffer financially ,emotionally and mentally.

THE COMMUNITY

Majority of members in tharaka community are farmers .

THIRD HOME VISITING

DATE;27 the march 2021

TIME:2PM

OBJECTIVES:

* Thank my client
* Find out the progress
* Terminate the study

I arrived at

Kaumbi's home at around 2pm and was welcomed .All the family members including her mother and thanked me for being with madam Kaumbi and helping her with health messages that have greatly helped her cope with the condition. madam Kaumbi claimed to be doing well .I thanked them all for welcoming me for home visitings and there I terminated my case study.

EVALUATION

Kaumbi's home was far and hence I had to use a vehicle all the time I did home visiting which was expensive. Despite the financial challenges my case study was successful and the family thanked me for the many teachings I taught them. after examining my client he is improving and on assessment he was able to understand about the condition and she was at position to avoid the trigger

CONCLUSION

Diabetes is a chronic illness, with proper management the complications associated with it can be avoided. This case study has been educative to me as I have gained practical experience on management of diabetes mellitus.

RECCOMENDATIONS

I would suggest allocation of funds by the government so that Diabetes patients can get free medical service.

I would suggests government to establish more equipped health facilities.

SUMMARY

I met my client Santanna Kaumbi at chuka level 5 hospital on 18th February2021.where she was first known diabetic patient.

She progressed well with the medication and later discharged home. through home visiting I mananged to educate her.

ACKNOWLEDGEMENT

I sincerely thank my client for accepting to be my client and receiving education I shared with her positively.

Secondly I thank my lecturer for giving me knowledge and skills on how to formulate a successful case study.

Lastly ,I would like to thank the management of chuka level 5 hospital for accepting to conduct a study in there hospital.

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