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NEPHROTIC SYNDROME: A CASE REPORT

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ABSTRACT

Nephrotic syndrome is a clinical syndrome defined by massive proteinuria (greater than 40 mg/m2 per hour) responsible for hypoalbuminemia(less than 30g/l).It is characterised by albuminuria, oedema, hypoalbuminemia and hypercholesterolemia. The etiology of nephrotic syndrome in adults is complex and ranges from primary glomerulonephritis to secondary forms. Primary forms of nephrotic syndrome in adults are comprised of three histological disease entities: idiopathic membranous nephropathy (IMN) minimal change disease (MCD) and focal segmental glomerulosclerosis (FSGS). It is caused by increased permeability through damaged basement membrane in the renal glomerulus especially infections or thrombo-embolic. It is the result of an abnormality of glomerular permeability that may be primary with a disease specific to kidneys or secondary to congenital infections, diabetes, systemic lupus erythematosus. Complications of nephritic syndrome are generalised edema, respiratory distress, sepsis, peritonitis, thromboembolism, failure to thrive. Nephrotic syndrome is evaluated by urine analysis, blood test, ultrasonography, and renal biopsy**.** Nephrotic syndrome treatment consists of mostly supportive nature. Supportive strategies include antihypertensive and antiproteinuric therapy and dietary recommendations. Patients with nephrotic syndrome are also at increased risk to develop thromboembolism. Hence, anticoagulant therapy is recommended.

Key Words:- Nephrotic syndrome, proteinuria, hypoalbuminemia, systemic lupus erythematosus, peritonitis, thromboembolism.

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INTRODUCTION

Nephrotic syndrome is a kidney disorder characterised by high levels of protein in the urine and swelling of body tissue. People of any age can be affected by nephrotic syndrome, although children aged between 18 months and 4 years are at increase risk (Anonymous 1)**.**

Causes

There are number of different disorders that cause nephrotic syndrome. Diabetes and to lesser extent, hypertension can diffuse damage to glomeruli and can ultimately lead to nephrotic syndrome. The followibg diseases can cause specific damage to glomeruli and often result in development of heavy proteinuria and in many instances nephrotic syndrome. Amyloidosis (stiffening and subsequent malfunction of kidney due to fibrous protein deposit in tissue) , congenital nephrosis, focal segmental glomerular sclerosis (FSGS)- creates scar tissue in glomerulus, damaging its protein repellent membranes, glomeulonephritis- diffuse, mesangial proliferative membranous damages protein repellent membranes, Ig A nephropathy, minimal change disease, preeclampsia (Anonymous 2).

Symptoms

Proteinuria- too much protein in urine, hypoalbuminea- low levels of protein in blood, high levels of fat and cholesterol in blood, swelling in legs, feet, ankles, hand and face (edema). Weight gain, feeling

very tired, foamy or bubbly urine, not feeling hungry (Anonymous 3).

Risk factors

The two most common health conditions associated with proteinuria are: diabetes, high blood pressure (HTN). Other risk factors include : being overweight, age above 65, family history of kidney disease, preeclampsia, race and ethnicity. Certain diseases increase the production of proteins in the body leading to proteinuria- multiple myeloma, amyloidosis, focal segmental glomerulosclerosis, minimal change, membranous nephropathy (Anonymous 4).

Complications

Without right treatment, nephrotic syndrome can cause other problems including : blood clots- blood clots may form because body looses too much protein from blood, affecting bodys ability to prevent clots. High cholesterol and triglycerides, high blood pressure, kidney failure- because damaged kidneys can no longer remove waste product from blood stream on their own, infections such as pneumonia and meningitis because body lose infection- fighting proteins called immunoglobulins (Anonymous 5).

Diagnosis

A health care provider diagnoses childhood nephrotic syndrome with medical and family history-taking medical and family history is one of the first things a health care provider may do to diagnose childhood nephrotic syndrome, physical examination, urine test- Dipstick test for albumin: a dipstick test performed on a urine sample can detect the presence of albumin in the urine. The child collects urine sample in container. For the test, a nurse or technician places a strip of chemically treated paper, called dipstick into childs urine sample. Patches on the dipstick change colour when albumin is present in urine. Urine albumin- to- creatinine ratio: a health care provider uses this measurement to estimate the amount of albumin passed into urine over a 24 hr period. Creatine is a waste product filtered in the kidneys and passed in the urine. A high one albumin- to – creatinine ratio indicates that the kidneys are leaking large amounts of albumin into urine. Blood test- the lab tests sample to estimate how much blood the kidneys filter each minute called glomerular filtration rate, serum albumin level is low in nephrotic syndrome, total cholesterol and triglycerides levels are increased. Ultrasound and kidney biopsy is also done (Anonymous 6).

Pathophysiology

Proteinuria occurs because of changes to capillary endothelial cells, the glomerular basement membrane (GBM) or podocytes which normally filter serum protein selectively by size and charge. The mechanism of damage of these structures is unknown in primary and secondary glomerular diseases, but evidence suggests that T- cells may upregulate a circulating permeability factor or down regulate an inhibitor of permeability in response to unidentified immunogens and cytokines. Other possible factor include hereditary defects in proteins that are integral to the slit diaphragms of glomeruli, activation of complement leading to damage of the glomerular epithelial cells and loss of the negatively charged groups attached to proteins of the GBM and glomerular epithelial cells (Anonymous 7).

Prognosis

The outcome varies, the syndrome may be acute and short term or chronic and unresponsive to therapy. The cause and development of complications also effects the outcome (Anonymous 8).

Treatment

Blood pressure medications: Drugs called angiotensin – converting enzyme (ACE) inhibitors reduce blood pressure and also reduce the amount of protein released in urine. Medications in this category include benazepril, captopril and enalapril. Another group of drugs that work in a similar way is called angiotensin II receptor blockers (ARBs) and includes losartan, valsartan. Other medications like renin inhibitors are also used.Water pills: water pills (diuretics) help control swelling by increasing kidneys fluid output. Diuretic medications include furosemide (Lasix) others like spironolactone and thiazides such as hydrochlorothiazide. Cholesterol reducing medications: medications called statins can help lower cholesterol levels. However it's currently unclear whether or not cholesterol lowering medications can specifically improve the outcome of people with nephrotic syndrome, such as avoiding heart attacks or decreasing the risk of early death. Statins includes atorvastatin, fluvastatin, lovastatin, pravastatin, rosuvastatin and simvastatin Blood thinners: also called anticoagulants help decrease bloods ability to clot and may be prescribed if the patient had a blood clot to reduce risk of future blood clots. Anticoagulants include heparin, warfarin, dabigatran, apixaban and rivaroxaban. Immune system suppressing medications: medications to control the immune system, such as corticosteroids may decrease the inflammation that accompanies underlying conditions such as minimal change disease (Anonymous 9).

Diet and lifestyle modification

Foods to eat on a nephrotic syndrome diet : lean meats(poultry, fish , shellfish) , peanut butter, soybeans, fruits (apple, watermelon, pears, oranges, banana), vegetables(green beans, lettuce, tomatoes, potato), rice, whole grains, cottage cheese, milk and butter.

Restrictions and foods to avoid on nephrotic syndrome diet: processed cheese, high sodium meats (ham, sausage, hotdogs), canned meats, pickled vegetables, salted bread. Diet tips for nephrotic syndrome: Be mindful of protein intake. The recommended protein intake is 1g/kg of body wt/day. Limit sodium intake, limit or avoid salt, cook with healthy oils like olive or coconut oils (Anonymous 10).

CASE STUDY

A male patient of age 8 years was admitted in hospital with complaints of fever with chills and rigors on and off since 3 days, cold, cough, shortness of breath, abnormal swelling all over the body since 2 days, nausea since 1 day. The vitals of patient were temp- 98^0 F , H.R-102/min, spo_2-97%. Lab investigation – RBC-5.7m/ul, Hb- 13.7gm%, WBC – 6.9thousand/cumm, N-39%, L-49%, E-06%, M-00%, B-0%, MCV- 76.6fl, MCH-24.0pg, MCHC-31.3%, PCV- 43.8vol%, Total bilirubin-0.4mg/dl, Direct bilirubin- 0.1mg/dl, Total protein-3.5gm/dl, Albumin- 1.3gm/dl, Globulin-2.2, AST-30 IU/L, ALT- 14 IU/L, ALP- 214 IU/L, A/G ratio- 0.5. Serum creatinine- 0.6mg/dl. CRP C- reactive protein : 2.3mg/dl. CUE- pus cells: 4-6 hpf, EP cells: 2-3 hpf. Ultrasound abdomen- mild to moderate ascitis, mild bilateral pleural effusions. Chest x-ray- radiopacities in bilateral lower zones in paracardiac region likely consolidation, blunting of both cp angles, pleural effusions.

TREATMENT

The patient was given with Inj. Unizid 500ml IV twice a day to treat bacterial infections. Inj. Piptaz 1 gm IV twice a day to treat bacterial infections or hospital acquired infections. Inj. PCM 300ml IV 6 hrly to reduce fever. Inj. Lasix 20 ml thrice a day prescribed for fluid retention in body and to reduce swelling in body. Tab.wysolone 10 mg twice a day was prescribed to induce remission of nephrotic syndrome and to reduce risk of serious infections. Tab.claribid 250 mg PO twice a day was prescribed. Tab. Supradyn PO once a day was given as multivitamin. Inj. Pan 20 mg IV once a day was given to reduce the secretion of acid in the stomach. Syp. Aptivate was prescribed to increase the appetite of the patient.

DISCUSSION

Nephrotic syndrome is a collection of symptoms to kidney damage. This includes protein in the urine, low blood albumin levels, high blood lipids and significant swelling. Causes include a number of kidney damage such as focal segmental glomerulosclerosis, membranous and minimal change disease. Nephrotic syndrome occur when filtering units of kidney are damaged. This damage allows protein kept in plasma to leak into urine in large amounts which reduces the amount of protein in blood. Since the protein in blood helps keep fluid in bloodstream, some of fluid leak out of bloodstream into tissues causes swelling called edema. Swelling is seen in legs and around the eyes. A urine test can check amount of protein, blood and other things to indicate kidney damage. A blood test can indicate how well kidneys are working. Treatment includes medicines to control blood pressure and cholesterol can help reduce chances of having heart disease. Medicines to help your body get rid of extra water can help control blood pressure and can reduce swelling. Medicines to prevent blood clots can help prevent heart attack and stroke. Changing your diet may also help manage symptoms. Choosing fish or low fat cuts of meat instead of higher fat options can help keep cholesterol under control. Limiting salt can help blood pressure at a healthy level.

CONCLUSION

Due to early diagnosis the patient was treated with antibiotics, analgesics, corticosteroids, and diuretics. Since the patient had complaints of fever with chills and rigors on and off the patient was prescribed with pcm. For abnormal swelling the patient was prescribed with lasix. Wysolone was prescribed to reduce risk of serious infections. The only way to prevent nephrotic syndrome is to control the disease that caused it. Maintaining healthy diet and lifestyle modification can prevent the disease.

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None

CONFLICT OF INTEREST

None declared.

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