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A Complication of Diabetic Nephropathy Seen In Type 1 Diabetic Patient – A Case Report.

A.SREEVANI [1]*, D.V.N.PADMINI [2].
Pharm-D Intern, Department of pharmacy practice, P. Rami Reddy Memorial College of Pharmacy, Kadapa ,516003, Andhra Pradesh, India

Abstract
Diabetes mellitus is a most common of the endocrine disorders. It may be classified according to aetiology as Type I and Type II diabetes. Type I diabetes is a disease characterized by the destruction of the insulin producing pancreatic beta cells, the development of which is either auto immune T-cell mediated destruction(Type-IA) or idiopathic (Type-IB).[1]' complications are grouped under microvascular disease(due to damage to small blood vessels) and macro vascular diseases (due to damage to arteries). Diabetic nephropathy (DN) or diabetic kidney disease is a syndrome characterized ,by the presence of pathological quantities of the urine albumin excretion, diabetic glomerular lesions and loss of glomerular filtration rate (GFR) in diabetics.[2]. In our case report a 27 years male patient came to the government general hospital, kadapa with the complaints of loss of consciousness due to low sugars and shortness of breath since one day, pedal edema , abdominal distension since three months his past medical history reveals that he is a known diabetic i.e Type-I since 20 years and under the medication of insulin and now recently he was diagnosed with diabetic nephropathy since four months.

Key Words: *Diabetes mellitus , Type I diabetes , Complications ,Diabetic nephropathy.*

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I. Introduction

Diabetes mellitus may be a cluster of metabolic diseases i.e. characterized by chronic hyperglycaemia ensuing from the defects in hypoglycemic agent secretion, hypoglycemic agent action, or both. Metabolic abnormalities in carbohydrates, lipids, proteins that results from importance of insulin as , an anabolic hormone. Low levels of insulin to attain adequate response and/or insulin resistance of the target tissues, principally skeletal muscles, adipose tissue and to a lesser extent, liver, at the number of insulin receptors, signal transduction system, and/or the effector enzymes or the genes are unit liable for these metabolic abnormalities.[3]

Etiologic classification of diabetes

I. Type-1 diabetes (-cell destruction, typically resulting in absolute hypoglycemic agent deficiency)
A. Immune mediate
B. Idiopathic
II Type-II diabetes (may vary from preponderantly hypoglycemic agent resistance with relative hypoglycemic agent deficiency to a preponderantly body fluid defect with hypoglycemic agent resistance)
III. Other types
A. Genetic defects of -cell operate
B. Genetic defects in hypoglycemic agent action
C. Diseases of the secretory organ duct gland
D. Endocrinopathies
E. Drug or chemical evoked
F. Infections
G. Uncommon sorts of immune-mediated polygenic disorder
H. different genetic syndromes typically related to polygenic disorder

IV. Type-IV diabetes (Gestational diabetes)

Here, we have a tendency to gift a posh case of a patient with T1DM and diabetic uropathy that was hospitalized and treated during a tertiary referral hospital, RIMS in Kadapa, state, India.

II. Objective

To study a case on diabetic nephropathy as a complication of diabetes mellitus type 1.

III. Case Report

A 27years old male patient came to RIMS,GGH, Kadapa with the complaints of loss of consciousness with low sugars (Hypoglycemia), shortness of breath since 1 day, pedal edema, facial puffiness and abdominal distention (anasarca) since 3 months, decreased urine output since 2 days, cough with productive sputum since 2 days. His past medical history reveals that he was known diabetic since 20 years(Type I) and under the medication of Insulin usage of 10 IU - SC- BD , Hypertension since 4 years and recently he was diagnosed with diabetic nephropathy since 4months, which is confirmed by the renal biopsy test in CMC Vellore.

Renal Biopsy shows that Nodular diabetic glomerulosclerosis (class III) with focal segmental glomerulosclerosis. CKDG2A3(eGFR-84 ml/min) ,Moderate Tubulointerstitial scarring (30%).

In RIMS, LAB investigations shows HB-7.9g/dl,TC-17,900cells/cumm, RBS-198mg/dl, urea-38mg/dl, creatinine-1.3mg/dl, Total bilirubin-0.2mg/dl, Total proteins-3.8g/dl, Albumin-1.3mg/dl, Globulin-2.5mg/dl, SGOT- 53IU/L, SGPT-38IU/L,ALP- 265IU/L.

Chest X-ray showed bilateral infilterates. Ultrasonography of abdomen showed liver size & echo texture is altered, kidneys right - 7.7*4.2cm, Left- 8.5*4.2cm - hydronephrosis, pelvicalcius dialtion noted , Ascitis - moderate ascites with an Impression of Left hydronephosis. Other diagnostic data such as ECG showed low QRS voltages in limb leads which is Abnormal ECG.

Taking into account the patient's complaints, history, physical, laboratory and radiological examinations, the patient was then diagnosed with Diabetic Nephropathy with type 1 diabetes mellitus. He is treated with Inj. Lasix(40mg, IV,BD), Inj. Cefperazone+salbactum(1.5gm, IV, BD), Inj. Pantop (40mg, OD), Inj. Human Albumin , T. Nodosis(500mg,TID), Inj. Erythropoietin(4000IU,SC,thrice weekly), Inj.H. Actrapid(8U,TID),T. Telmisartan(20mg,OD), T.IFA(200mg,BD), Syp.Chlorpheniramine Maleate(10ml,TID), , T.Iron Folic acid (200mg ,OD), T.Calcium+ Vit.D3 (500mg,OD).

IV. Discussion

Diabetes is related to variety of complications. Acute metabolic complications related to mortality embrace diabetic keto acidosis from exceptionally high blood sugar concentrations (hyperglycemia) and coma because the results of low blood sugar (hypoglycemia). These complications are wide locomote and are due a minimum of partly to chronic elevation of blood sugar levels, that results in injury of blood vessels (angiopathy). Complications are sorted below "microvascular disease" (due to wreck to small blood vessels) and "macrovascular disease" (due to wreck to the arteries). Microvascular complications embrace eye disease or "retinopathy," kidney disease termed "nephropathy," and neural injury or "neuropathy". The major macrovascular complications embrace accelerated cardiovascular disease leading to the myocardial infarction and the cerebrovascular disease manifesting as strokes.5

Diabetic nephropathy is one of the most serious complications in patients with type 1 diabetes. It includes many stages, microalbuminuria being an early marker of the structural renal disease. The prevalence of microalbuminuria ranges from 12% to 25% at 10 years of evolution (1) and from 30% to 40% after 20 years .[6]

Diabetic kidney disease (DKD) also referred to as the diabetic nephropathy. The patients with diabetes and chronic kidney disease (CKD) presented , a unique cohort of DKD population, which is identified by the elevated urine albumin excretion or the reduced glomerular filtration rate (GFR) or both.[7] Several risk factors have been associated with the onset of nephropathy, apart from glycemic control , such as glycemic variability , duration of the diabetes, hypertension , smoking , plasma lipid levels , body mass indexes (BMIs) and genetic predisposition. Contradictory data have been published regarding factors, such as sex or age at diagnosis , with most of the studies referring to pediatric populations.[8]

The pathophysiology of DKD involves the various pathways such as the hemodynamic, metabolic, and inflammatory pathways. The metabolic pathway includes the polyol pathway, hexosamine pathway, advanced glycation finish merchandise, and enzyme protein kinase c pathway.Hyperglycemia induced kidney damage mediates through the hemodynamic pathway by enhancing the formation of glycosylated end products, protein kinase C activation, and diacylglycerol synthesis.An increase in reactive oxygen species (ROS) formation induced by hyperglycemia through activation of electron transport chain considered as the initiators in the development of diabetes complications.[9]

V. Conclusion

Here, we presented a 27-year-old male with T1DM, second grade CKD stage II (diabetic nephropathy). In this patient, albuminemia, anemia, hypoglycaemia, anasarca, edema were treated based on findings in laboratory investigations , physical examinations, renal biopsy test.

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