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(CASE REPORT)

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Case study of patient with diabetic nephropathy and emerging subacute cutaneous lupus erythematosus

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Abstract

Introduction: Diabetes is one of the chronic diseases spread worldwide. Diabetic kidney disease (DKD) also known as Diabetic Nephropathy, is a chronic, progressive disease that is the most common cause of end-stage renal failure. High BP with chronic blood glucose level damage tiny blood vessels in the kidney and their function. Cellular degradation in the nephron and podocytes of the renal glomeruli, contributes to the impairment of renal function. As diabetic nephropathy majorly seen in aged person precaution should be taken while selection of drug.

Case presentation: The patient, in this report, is a 60-year-old male who was working as driver. Patient having diabetic history in their family. His mother has diabetes mellitus. He is with 10 years history of both hypertension and diabetes mellitus. Then in 2021 he was also infected by COVID-19 during pandemic. After few weeks of recovery patient start experiencing swelling feet and lower legs during night time. Blood test reveals elevated creatinine level and patient suffered rapid progression of DKD. The condition known as diabetic nephropathy. Despite aggressive treatment, the patient finally became dialysis dependent. Now past few weeks the patient is also suffered from newly developing skin disease. His skin become getting darker. Histomorphological features suggestive of Subacute Lupus Erythematosus. **Results and discussion:** Now patient is following regular medication and diet. Patient taking doctor's monthly appointment and following maintenance dialysis three times a week.

Keywords: Diabetes; Diabetic Nephropathy; Albuminuria; Proteinuria; Subacute Lupus Erythematosus

1. Introduction

Diabetes mellitus is one of the major life-threatening health problems. Diabetes condition characterised by high level of blood glucose also called as hyperglycaemia. [1] It is of three types type 1, type 2 and gestational diabetes. Type 1 also known as insulin dependent diabetes mellitus during which our immune system mistakenly destroyed beta cell pancreas. Thus, insulin production is reduced and glucose stay in the blood. Type 2 also known as non-insulin dependent diabetes mellitus in this pancreas produced enough insulin but the cells are not responsive to insulin and therefore problem with glucose import and is stay in blood. Gestational diabetes develops during pregnancy and usually resolve after childbirth. [2] If diabetes is not well controlled it can lead to number of serious complications including the retinopathy, nephropathy, neuropathy, foot ulcer and cardiovascular problems. [3] Diabetic nephropathy (DN) is one of the major microvascular complications of diabetes, affecting more than 1/3 of people with type I diabetes and 1/2 of people with type II diabetes. It is a progressive kidney disease caused by long-term exposure of diabetics to high blood sugar levels. Prolonged hyperglycaemia leads to excessive production of reactive oxygen species (ROS) and induces inflammation and oxidative stress, leading to kidney damage. Over time, this damage compromises the kidneys' ability to function properly. Early detection, proper management, and lifestyle modifications are key components to avoid

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further complication. [4] Cutaneous lupus erythematosus (CLE) is an autoimmune skin disease and classified into 3 main subtypes: acute CLE, subacute CLE (SCLE), and chronic CLE. This resulting in characteristic skin lesions and its medical assessment includes a physical examination, laboratory testing, and occasionally a skin biopsy. Progression of SCLE leads to systemic lupus erythematous (SLE). Combining SLE and DM is not common, but because of the increased risk of renal, peripheral neuropathy, and retinal disease, it is important to be very careful when determining which disease is causing a given clinical feature. This is because DM requires better metabolic control, while active SLE requires more immunosuppression. [5]

2. Case study of patient

The patient is 60-year-old male with a 10-year history of poorly controlled diabetes was admitted for the evaluation of nephrotic syndrome in 2021. He had been also a patient of hypertension for the past 10 years. In the past days, he was a driver and due to his bad company, he was used to drink regularly and he also have a history of diabetes in his family. Despite efforts to maintain sugar level control, the patient developed a Diabetic Nephropathy which is diagnosed in year 2021 and he was also affected by covid-19 during pandemic. After complete recovery he was return to home. About 2-3 weeks later he started to suffer swelling feet especially during night time. Elevated creatinine levels are seen in the blood test, and the patient was diagnosed with quickly progressing Diabetic Kidney Disorder (DKD). The patient eventually become a dialysis dependent despite receiving rigorous medicines for few days. IN-n December 2023 patient had been experienced a newly emerging skin condition. Physical examination of this hyperpigmented dry skin by dermatologist suggested that it was perforating dermatosis which is due to kidney disease with hyperphosphatemia. So, doctor advised skin biopsy. Microscopy reveals epidermis showing parakerotosis, acantholysis vacoular changes at interface, along with lymphocytic infiltration. Underlying dermis shows edema along with lymphocytic inflammatory infiltration and extravasated red blood cells. This report revealed the condition as Subacute lupus erythematosus. Prompt and aggressive treatment was initiated due to associated risk of infection, further tissue damage. Some of patient's laboratory data on admission were as follows:

Creatinine level was found 6.46 mg/dl which was very high than normal level reveals that patient suffers from Chronic Kidney Disorder (CKD). Prothrombin time- 13.2 seconds, glycosylated haemoglobin- 5.4%, post prandial urine glucose level- 136.3 mg/dl all are in normal range. Haematological reports revealed haemoglobin 10.8g/dl, Red Blood Cell (RBC) count 3.21millions/cumm, Packed Cell Volume (PCV) 31.4% were less than normal value. The platelet counts 2.02 lakhs/cumm, total WBC count 7130/cumm and differential WBC count also were normal but basophils count was 0. Liver function test revealed total bilirubin 6.1 mg/dl, total protein 7.57 g/dl, SGOT 19 U/L was in normal range. But level of alkaline phosphatase 141 U/L, globulin 3.7 g/dl were higher than normal and of SGPT 5 U/L, A/G ratio 1.05 were less than normal range. Level of different electrolyte Na/K/Cl was 133/3.8/92 respectively. Level of sodium and chloride were less than normal. The immunological test for HBSAG and HCV antibodies found as non-reactive and also negative for HIV antibodies. Blood pressure was 130/70mm Hg, heart rate 56 beats/min. From reports of 2D echo and color doppler report grade 1 diastolic disfunction is observed with normal LV systolic function. To rule out perforating dermatosis due to CKD with hyperphosphatemia doctor advised skin biopsy.

Figure 1 Current physical appearance of patient's skin

3. Discussion

Diabetic nephropathy and subacute lupus erythematous (SCLE) are two different conditions have different etiologies and primarily affect different organ systems. In this case report we observed these two conditions are existing together. This patient analysis supports the theory that elevated levels of creatinine in the blood indicate advanced stage impaired kidney function in diabetic patient and decreased glomerular filtration rate (GFR). Diabetic Nephropathy (DN) is a common and serious complications of diabetes that can lead to significant morbidity and mortality. Overall, the treatment of diabetic nephropathy involves a managing glycemic control, blood pressure management, lipid management, dietary modifications, and cardiovascular risk reduction and progressive kidney damage. In end-stage Diabetic Kidney Disease, dialysis or a kidney transplant is usually necessary for survival. [4,7] In this case study, we found important factor that cause cutaneous lupus is antihypertensive medicine. Subacute cutaneous lupus erythematosus (SCLE) is an autoimmune disease that significantly impairs quality of life. Patients initially diagnosed with isolated SCLE may later develop systemic lupus erythematosus (SLE). Combining SLE and DM caused increased risk of renal condition. As patient already having chronic kidney disorder proper health care and treatment is required to avoid further complications. A skin rash is the first manifestation of the disease in 20-25% of patients with SLE. Genetic susceptibility and environmental exposure are two important factors involved in the pathogenesis of SCLE. It is estimated that about one-third of all cases of SCLE are caused by different medications. It can occur mostly due to antihypertensive drugs and sometimes with antihistamines, chemotherapy drugs, statins and nonsteroidal anti-inflammatory drugs (NSAIDs), and antiepileptic drugs. [8]

4. Conclusion

Managing diabetic nephropathy in patients with cutaneous lupus requires a multidisciplinary approach, involving glycemic control, blood pressure management, renal function monitoring, dietary modification, and specialist referral. The patient has high blood pressure which is under control due to ongoing medication and he is also on dialysis three times a week. However, the level of creatinine in the body is still high. Also, the patient feels a little bit of muscle pain and bone pain. The patient's diet is also properly followed. Despite this, there is no significant improvement in the patient's health. Since these medications have just been started, doctor has advised to take the same medication for the next few months and looking for improvement in patient's condition.[9]

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

Not applicable

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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