International Journal of Diabetes Research 2013, 2(4): 61-63
DOI: 10.5923/j.diabetes.20130204.01

Overlooked and Uncontrolled Diabetes Mellitus is Always Venomous for Cardiovascular System: A Case Report and Literature Review

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Abstract Present case report will highlight the importance of guidelines for diabetic patients and implementation of these guidelines will not only save the patients from co morbidities but also from lethal prognosis of diabetes mellitus (DM). A case of complicated diabetes was studied in detail and all aspects of case were studied by analyzing reports and available data from patient profile. Follow up medicines do not match with guide lines provided by American Heart Association (AHA) and diabetes guidelines for diabetics and ischemic heart patients. Variations in glucose levels in the body are main cause of poor prognosis of the disease. Now a days, clinician and diabetologist are more concerned to control the complications of diabetes by controlling the glucose level close to normal values. Proper selection of drugs in diabetes and control of glucose level may avoid patients from secondary complications. Following the international guidelines can save patient from associated diseases. In present case standard international guidelines have not been adopted.

Keywords Diabetes Mellitus, American Heart Association, Insulin Dependent DM

1. Introduction

Diabetes mellitus is a global health problem[1]. The number of people with diabetes increasing due to rapid urbanization, excessive use of toxic preservatives, alcoholism, environmental factors, drug induced diabetes and associated diseases. Quantification of prevalence and number of people affected by the diseases is inevitable to make some necessary steps for planning and allocation of resources to cope with this challenge. Diabetes along with co morbidities debilitates the human body. Co morbidity, the occurrence of one or more chronic conditions in the same person with an index-disease, occurs frequently among patients with diabetes[2]. Currently, integrated diabetes care programs focus on diabetes-related co morbidities like cardiovascular diseases, retinopathy, nephropathy and diabetic foot. A reasonable number of evidence supported the idea that diabetes can induce cardiovascular diseases which not only disturb the quality of life of patient but also worsen the prognosis of the disease. However, patients with diabetes do not only have diabetes-related co morbidity but also have non diabetes-related co morbidity, such as depression and musculoskeletal diseases[2, 3].

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Approximately half of adults with diabetes and nearly 60% of elderly adults with diabetes have at least one associated chronic disease[4]. As many as 40% of elderly adults with diabetes have four or more associated diseases. However, diabetes care guidelines typically focus on decreasing diabetes related micro vascular and cardiovascular complications[5]. Diabetic patients with related co morbidities constitute a group of high risk cardiovascular diseases. Frequently associated diseases with diabetes include chronic renal failure (CRF), peripheral vascular disease (PVD), and low ejection fraction (LEF) can also impact on short-term survival in the patient undergoing CABG, whether diabetic or not.[6, 7].

The aim of this case report is to examine the impact of co morbidities in patients with diabetes and impact of uncontrolled glycemia on prognosis of disease. Our present short communication will also elaborate the comparison between treatment protocol adopted by the cardiologist & diabetologist and treatment guidelines offered by international community for the better treatment of diabetes mellitus & heart failure. Furthermore, this study of particular case will highlight the rational use of drugs in diabetes mellitus & heart failure.

2. Case Report

An old female of 65 years of age was admitted to hospital with major complaint of apnea. Upon taking the history, it

was noted that she is suffering from fever and productive cough for last 3 days. She was known asthmatic and diabetic patient for last 4/5 years and 6/7 years respectively. Patient was also established patient of ischemic heart disease. During early diagnostic procedure, cardiologist found a susceptible case of heart failure as ejection fraction was 30%. Currently patient was taking table diamicron (oral hyperglycemic agent) only to control diabetes. During the hospital stay patient received following medication, Injection augmentin 1.2gm (co-amoxiclav) 3 times in a day, tablet klaricid 500mg (klarithromycin) 2 times in a day, tablet digoxin 0.25 mg half tablet and X-Plendid 75mg (rosuvastatin) once in a day, tablet capoten (Captopril) 25mg 2 times in a day, diponit patches, injection lasix 40mg (frusemide) once in a day, tablet monis 20mg (isosorbide mononitrate) 2 times in a day and Xaltide inhaler with spacer. Patient was discharged from hospital after having 6 days of symptomatic treatment. Patient was getting stable day by day except ejection fraction 25% on 5th day. Medicines which were advised on discharged were tablet lowplat plus (clopidogrel) once daily, tablet spiromide (diuretic) once daily, tablet monis (isosorbide mono nitrate) once daily, tablet digoxin 0.25mg (cardiotonic) half tablet once daily with one drug holiday in a week and Capsule nexum 40mg (proton pump inhibitor) once daily. Patient was advised not to take food with fat and sugar.

3. Discussion

Diabetes mellitus is metabolic disorder disease and can be classified as IDDM (Insulin Dependent DM) and NIDDM (Non Insulin Dependent DM). Variation in normal glucose level results in decreased supply of glucose to major organ and results in various pathological conditions. Diabetic patients have greater chances of cardiovascular disease as compare to nondiabetics[8]. Epidemiological studies demonstrate strong connection between hyperglycemia and occurrence of complications of diabetes[13]. It is obvious that by controlling the glucose level close to normal value can prevent from associated diseases like ischemic heart disease, stroke and kidney damage and retinopathy. An association between hyperglycemia and cardiovascular disease is suggested by some studies[14] but not all studies[15] on type I diabetic patients. About two third of the total population of type II DM patients die from macro vascular disease[9]. Increase in lipid levels and blood pressure is common abnormality of this metabolic syndrome. Controlling the blood pressure and lowering of lipid level can reduce the risk of CV events but do not eliminate the risk of CV events[10].Present case under discussion is well established patient of NIDDM and using diamicron tablet (gliclazide, an oral hypoglycemic agent). Co morbidities arise as a result of complication of diabetes irrespective of glycemic control. CARD trials (Cardiovascular atorvastatins diabetic studies) strongly recommend the use of atorvastatin in diabetic patients to avoid secondary complications. This particular case is diabetic but never treated with atorvastatin which result in the secondary complication like ischemic heart disease. It seems an uncontrolled diabetic case with careless attitude of patients. As it was noticed upon history that patient had habit of drug holidays. By following the international guidelines for diabetic patients will not only increase the quality of life of particular patient but also can avoid co morbidities. Hypertension and diabetes should be treated aggressively to avoid secondary complications[11]. It should be always in back of mind of clinicians that along with glycemic control some supportive therapies should be recommended to avoid secondary complications in diabetic patients. It can be presumed that if present case would be handled properly as per guidelines for diabetes prognosis may not be worse like this. So cardiac complication arises in this case may be reason of poor glycemic control. In this particular case ACE inhibitor drug captopril is recommended which is famous for its use in hypertensive diabetic patients but at the same time ACE inhibitor can cause dry cough even when patient is already suffering with cough and may badly affect prognosis of the disease. Angiotensin receptor blockers can be replaced by ACE inhibitor as ARBs decreases dry cough[12]. If we observe critically the profile of the patient during hospital stay, diabetic record has not been managed and given least importance irrespective of the fact that new disease is because of DM. All the diuretics like frusemide and spiromide and digoxin justify their role in heart failure as these medications will increase the reabsorption of Na^+ in renal tubules and make the cardiac output similar to normal heart. ACCA/AHA guidelines strongly recommend the use of diuretic and digoxin in heart failure. At discharge slip no medication is prescribed to control the glucose level which is area of gap to be highlighted and focal point of this case report. Patient is recommended to avoid fat and sugar containing food.

4. Conclusions

It is quite obvious that if patient had medication as per international guidelines like CARDS trial recommendations, ACCA/AHA guidelines, WHO guidelines for diabetic patients then results and prognosis of diabetes could be different. Initially patient was diabetic after that ischemic heart disease entered under this umbrella. If international guidelines are not adopted for this diabetic and CV patient then retinopathy or stroke can be next possible tragedy.

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