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Research Article

DOUBLE VESSEL DISEASE ASSOCIATED DUE TO TYPE -2 DIABETES MELLITUS WITH A NORMAL ELECTROCARDIOGRAPH

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ABSTRACT

A software employee male patient admitted in emergency department with chief complaints of upper right back pain, hypoxia, unable to stand or sit. He was with a full of sweating and chillness of his upper and lower limbs. He was a known case of type-2 diabetes mellitus and under medication with Tab Metformin 500mg BD. He has elevated random blood sugar- 237mg/dl and blood pressure- 150/90 mmHg. Surprisingly his electrocardiograph was normal but Coronary Angiogram impressions were with 1) Proximal Right Coronary Artery was dominant and shows 70 – 80% stenosis, mid and distal RCA shows mild plaque, 2) Proximal Left Anterior Descending shows thrombus containing 90% occlusion, 3) Acute Anterior Wall Myocardial Infarction. He was diagnosed as Double vessel disease in Coronary Arteries due to Type-2 Diabetes Mellitus. Physician kept the stent for his Left Anterior Descending and prescribed Tab Atorvastatin 40mg OD, Tab Clopidogrel 75mg OD, Tab Asprin 100mg OD, and Tab Glipizide 5mg OD and counseled with breathing exercises, diet modification, and life style changes. It was planned to put another stent in Right Coronary artery after month but it was not done due to his quite good condition was revealed again after Coronary Angiogram.

INTRODUCTION

The heart has three main coronary arteries. Depending on the number of vessels that are narrowed patients are said to have single, double, or triple-vessel disease. When the vessel becomes narrowing more critical, the patient can develop symptoms such as chest pain or shortness of breath. This is called angina [1].

Revascularization of multi-vessel coronary artery disease is commonly performed throughout the world. Among approximately 700,000 patients who undergo multivessel coronary revascularization yearly, 25% have diabetes [2, 3].

An electrocardiography (ECG) plays a pivotal role in evaluating patients with suspected coronary artery disease (CAD). However, in patients who present to the emergency department (ED) with a chief complaint of chest pain, the initial ECG may be normal or nonspecific interpretations despite later discovery of CAD. These patients have low rates of mortality and cardiac complications [4] and thus are considered low risk [5]. The rate of these normal ECG findings may vary from 3% to 16% [6, 7].

Several studies elucidate the mechanisms underlying the vascular diseases. Visceral fat, insulin resistance (IR) and changes in circulating factors levels are related to vascular dysfunction [8]. Endothelial cell dysfunction begins when atherogenesis forms due to diabetes which induces nitric oxide and prostacyclin deficiency. Monocytes and T lymphocytes binds to the endothelium where this is mediated by adhesion molecules such as vascular cell adhesion molecule (VCAM), intercellular adhesion molecule (ICAM) and E-selectin locates over endothelial surface. Monocytes move into the subendothelial space, matures into macrophage which receives lipid through certain scavenger receptors such as SR-A and CD-36 and becomes a foam cell. Later smooth muscle cells approach to the surface and form the fibrous cap lesions. Finally lipid-laden macrophages release matrix metalloproteinase's causing plaque rupture and develop coronary syndromes like myocardial infarction and unstable angina [9].

Oxidative stress role in atherogenesis especially in diabetes mellitus patients [10, 11] occurs due to the triggering of elements such as antioxidant deficiencies, increased release of

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reactive oxygen species and the process of glycation and glycol-oxilation [12]. Elevated plasma levels of nitrotyrosine, an indication of protein oxidation[13,14], elevated both plasma and urine levels of F2-isoprostane, an indication of oxidative stress [13-16] are the evidences of oxidative damage to DNA[16] which was observed in patients with T2DM.

Various combinations of traditional and non-traditional risk factors play a role in Type-2 diabetes mellitus in promotion to increase cardiovascular disease overlying with clustering of vascular risk associated with insulin resistance [17] with an evidences of solid interactions between hyperglycemia and microvascular disease [18].

Case Presentation

A male patient aged 55 years, a software employee admitted in emergency department with severe chief complaints of upper back pain on the right side, suffocation, breathlessness, unable to stand or sit. He was observed with a full of sweating and chillness of his hand and feet. He is already a known case of type-2 diabetes mellitus. He was under medication with Tab Metformin 500mg BD. His random blood sugar levels demonstrate 237mg/dl. His blood pressure was 150/90 mmHg. Surprisingly his electrocardiograph was normal but Coronary Angiogram impressions were with 1) Proximal Right Coronary Artery was dominant and shows 70 – 80% stenosis, mid and distal RCA shows mild plaque, 2) Proximal Left Anterior Descending shows thrombus containing 90% occlusion, 3) Acute Anterior Wall Myocardial Infarction. Finally he was diagnosed as Double vessel disease of Coronary Arteries associated due to Type-2 Diabetes Mellitus.

Physician put the stent for his Left Anterior Descending and prescribed Tab Atorvastatin 40mg OD, Tab Clopidogrel 75mg OD, Tab Asprin 100mg OD, and Tab Glipizide 5mg OD. He was counseled with few breathing exercises, diet modification, and some life style changes. Initially it was decided to put another stent in Right Coronary artery after month but it was not done due to his quite good condition was revealed again after Coronary Angiogram.

DISCUSSION

This was an uncommon case report with double vessel disease of coronary arteries associated because of type-2 diabetes mellitus surprisingly with a normal ECG report. Patient admitted in emergency department with complaints of upper right back pain, suffocation, hypoxia, sweating and chillness of his hand and feet. He is known case of Type-2 Diabetes mellitus. Some studies reveal that 25% of type-2 diabetes mellitus with cardiovascular disease suffers from multivessel coronary artery disease.

Visceral fat, insulin resistance and changes in circulating factors levels are of different mechanisms which underlies in type-2 diabetes mellitus associated with coronary arteries. As the patient is from stress, oxidative stress in type-2 diabetes mellitus leads to atherogenesis in coronary arteries.

Surprisingly his ECG was reported normal as some studies reveal initial ECG may be normal or nonspecific interpretations later results with coronary artery disease and these patients have low rates of mortality complications and low risk. But this case patient went with stent insertion in his left anterior descending. Although stent insertion also planned in right coronary artery but was not done in right coronary artery due to his quite good condition after his medication with atorvastation, clopidogrel, asprin and glipizide.

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