

Diabetes Mellitus and Cardiovascular Diseases

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Abstract: The number of diagnosed diabetics is increasing with age. Failure to control the disease leads to serious complications. Acute complications include hypoglycemia, diabetic ketoacidosis, hyperosmolar hyperglycemic syndrome; while chronic ones include microvascular and macrovascular diseases. Cardiovascular diseases remain the most common cause of death of this population, especially endangered by coronary heart disease and stroke. Lifestyle modifications, rigorous control of diabetes but also possible concomitant diseases significantly extend the occurrence of complications and increase the quality of life of diabetics. We present diabetic patients with coronary heart disease, complaints, progress and management of these cases.

Keyword: diabetes mellitus, coronary heart disease, complications

1. Introduction

Diabetes mellitus is a metabolic disorder characterized by chronic high blood glucose which can result by several mechanisms. It is important that the defect could exist in any stage of the sugar pathway resulting as diabetes mellitus. So, main disorders are mentioned in secretion of the Insulin and/or effect of this important pancreatic hormone. This disease is important contributor

to vascular damages known as micro and macro vascular complications. Meanwhile the motivation of the diabetics to strictly pursue the recommendations of healthcare workers is very poor in first decades of the disease. Better to say the motivation for regular visits, check up's, lifestyle changes, etc. remains low until the appearance of first serious, fearful complications. Cardiovascular diseases as main cause of early death are major complications of Diabetes mellitus. (1, 2) And still the high unregulated level of blood sugar in adults increases the risk for sudden death, stroke and coronary heart disease. (3) Refreshing our memories about the risk factors, we are aware of modifiable and non modifiable ones, being more eager on the multiplied risk in case of more than one risk factor present at the same patient (including hypertension, altered lipids, altered glycemia, etc. (4) There are different approaches for risk factors control, such as: concerning blood glucose level with strict control of glycated hemoglobin; blood pressure and cholesterol levels trying to manage the risk factors eventual disease and postpone the complications. (5) We aim to present cases with diabetes mellitus and different clinical situations involved.

Case presentation

Case 1

Female patient, 52 years of age, diabetic for more than ten years, on oral therapy. Her main complaint was discomfort during physical engagement. Physical examination and resting electrocardiography revealed normal. On planned stress electrocardiography, during the pre final phase of engagement, appeared extreme bradycardia with significant blood pressure drop, which required abrupt termination of the exam, and monitor the patient in rest, supine position. The patient was hemodynamically stable after a very short time and the coronarography was indicated. The coronary angiography discovered significant coronary three vessel disease leading to the coronary aortic by pass performed immediately. Post intervention period was with no complications.

Case 2

Diabetic 79 years old female patient, on insulin treatment for about eight years, when, meanwhile due to Non-ST-elevation myocardial infarction, was stented. She suffers for more than twenty years from high blood pressure and is under medications. Currently she presents with chest discomfort and anxiety. On resting electrocardiography (Figure 1.) signs of left anterior hemiblock, one supraventricular extrasystole, biphasic T wave in left precordial leads and also high levels of troponine were found. The on hand cardiac ultrasound revealed on left ventricle hypertrophy with diastolic dysfunction. Her family members have managed to bring the drawing of previous cardiology intervention (Figure 2) showing multiple lesions and the presence of stents. The present coronary angiography revealed on significant lesion on right coronary artery which required primary percutaneous coronary intervention.

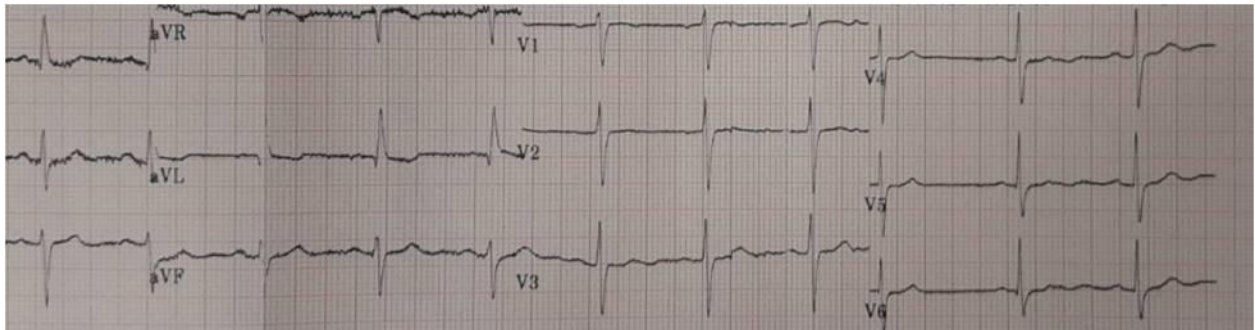


Figure 1. Resting electrocardiography on admission of the second case

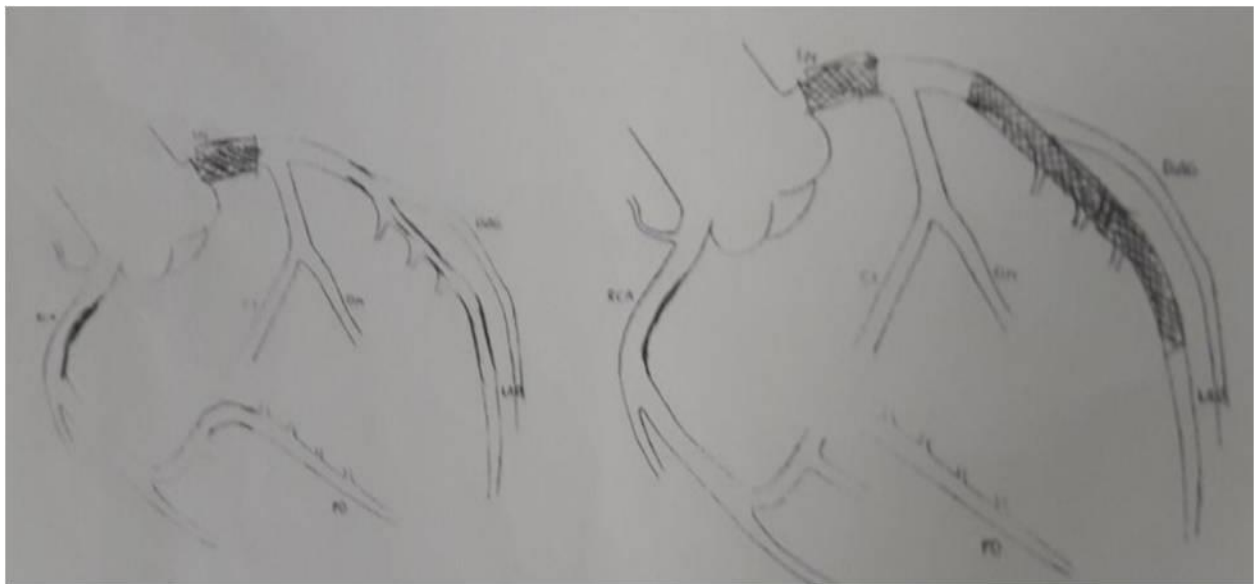


Figure 2. Previously coronary artery situation at the first cardiology intervention

Case 3

A 60 years old male presented with pale skin, diffuse sweat, chest pain for last three days, anxious. Family members declared that he is a diabetic for more than ten years, on insulin treatment, and an active smoker. Resting electrocardiography was with diffuse changes for coronary heart disease (Figure 3). Emergency, on bed ultrasound revealed with hypo- akinetic segments of interventricular septum, and hypokinesia of inferior and lateral wall with Ejection Fraction around 40%. Cardiac enzymes and troponine were high. Because of diffuse significant coronary lesions, patient underwent coronary artery bypass graft surgery as a decision after primary percutaneous coronary intervention at dominant right coronary artery.

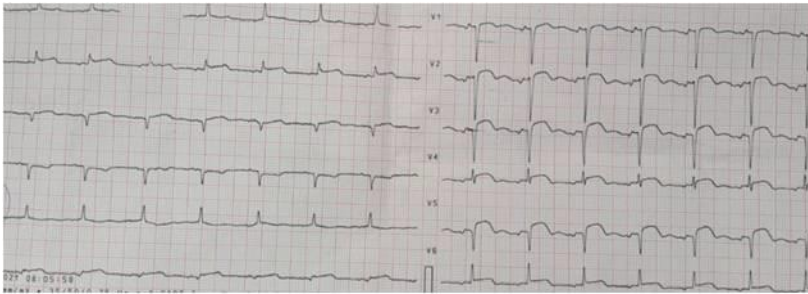


Figure 3. Emergency resting electrocardiography of the third case

2. Discussion

Our patients need multidimensional care focusing on counseling and education, lifestyle changes, in particular, stop smoking, and along with glycemic control also treatment of hypertension, dyslipidemias, and taking care of thrombotic risk. That's why worldwide activities are oriented on controlling the body weight besides staying physically active, stopping alcohol intake, modifying nourishment. (6) According to important studies the improvement of glycosylated hemoglobin levels for one percent at diabetics decreases microvascular complications by above twenty percent, while at diabetics type 2 less heart insufficiency, less peripheral artery disease and amputations are noticed. Authors worldwide stress out that the combination of diabetes and heart insufficiency has higher mortality rate than diabetes alone. (1, 7) The assessment of

cardiovascular risk is done not only identifying the classic ones but also, at this metabolically disordered population, assessment of glycemia, cardiac rate and rhythm disturbances, presence of macrovascular and microvascular changes is taken into account. (8) The presence of multi risk factors even at hypertensive patients, with diabetes mellitus and presence of organ damage classifies persons in the level of higher cardiovascular risk for immediate initiation of interventions. (9, 10)

3. Conclusions

Strict blood sugar control reduces cardiovascular risk, risk of coronary artery disease, stroke or death, while in the mean time; it is noted to reduce microvascular complications as well. Adding up stabilizing other modifiable risk factors as blood pressure, lipid levels etc. is of a great importance too. Multidisciplinary cooperation toward reducing and controlling risk factors for these diseases should become a common approach in term of reducing morbidity and mortality from cardiovascular disease in diabetics. The cases presented clearly show that diabetics developing ischemic heart disease have diverse clinical features involving different diagnostic and therapeutic approaches which must be taken into account.

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