

## Diabetic Cardiomyopathy: A Case Report

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### Abstract

### Case Report

Diabetes has become in a few years a veritable epidemic affecting several million people in the world. The cardiovascular complications are the leading cause of death in diabetics. More particularly, cardiac involvement is essentially summarized in ischemic heart disease, cardiac autonomic neuropathy and more recently described diabetic cardiomyopathy, a specific entity responsible for – or contributing to – the onset of heart failure which is related to a diastolic dysfunction preceding an alteration of the systolic function and whose prognosis makes all the seriousness of this pathology. Indeed, large epidemiological studies have demonstrated that diabetes is an independent risk factor for heart failure. These data are supported by numerous preclinical studies, highlighting metabolic abnormalities, calcium homeostasis, or even neuro-hormonal, in models of diabetes. Optimal glycemetic control appears to limit the incidence and severity of heart failure in diabetics. The treatment of diabetic cardiomyopathy is no different from that of non-diabetic heart failure patients. A better understanding of this entity therefore necessitates close collaboration between cardiologists and diabetologists.

**Keywords:** Diabetes, cardiomyopathy, heart failure, diagnosis.

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## INTRODUCTION

Cardiovascular complications of diabetes represent the leading cause of death for diabetics and coronary disease occupies a preponderant place. In contrast, diabetic cardiomyopathy is usually only briefly mentioned at the end of the chapter. This fact is due to the relatively recent character of its individualization and the difficulty of its diagnosis. We report the case of a patient diagnosed with diabetic cardiomyopathy as part of his degenerative assessment.

## MEDICAL OBSERVATION

This is a 53-year-old patient, known to have been diabetic for 20 years on poorly balanced insulin. Admitted to his endocrinologist for a super infected skin ulcer put under antibiotic treatment and local care then referred to cardiology for assessment of the impact of his diabetes.

The patient was cardiac asymptomatic. Clinical examination on admission was normal. The electrocardiogram showed a regular sinus rhythm with a ventricular rate of 86 c/m and negative T waves in the

apical septum. The chest X-ray showed cardiomegaly with a sub diaphragmatic tip. The biological assessment did not find any abnormality.

Transthoracic echocardiography showed an aspect of ischemic heart disease with kinetic disorders such as: akinesia of the inferoseptal and inferior wall and hypokinesia of the anterolateral and anterior wall with an estimated LVEF of 38% in biplane with minimal MI.

A diagnostic coronary angiography was indicated showing an atheromatous network without plaque or significant stenosis.

A complementary cervical echo-sounder was carried out having objectified a plate of atheroma of the right carotid bulb of 35 to 40% and of the left carotid bulb not exceeding 15%.

In front of coronary angiography data. A cardiac MRI was requested, which came back in favor of a moderate systolic dysfunction without sequelae of necrosis or foci of intramyocardial fibrosis.

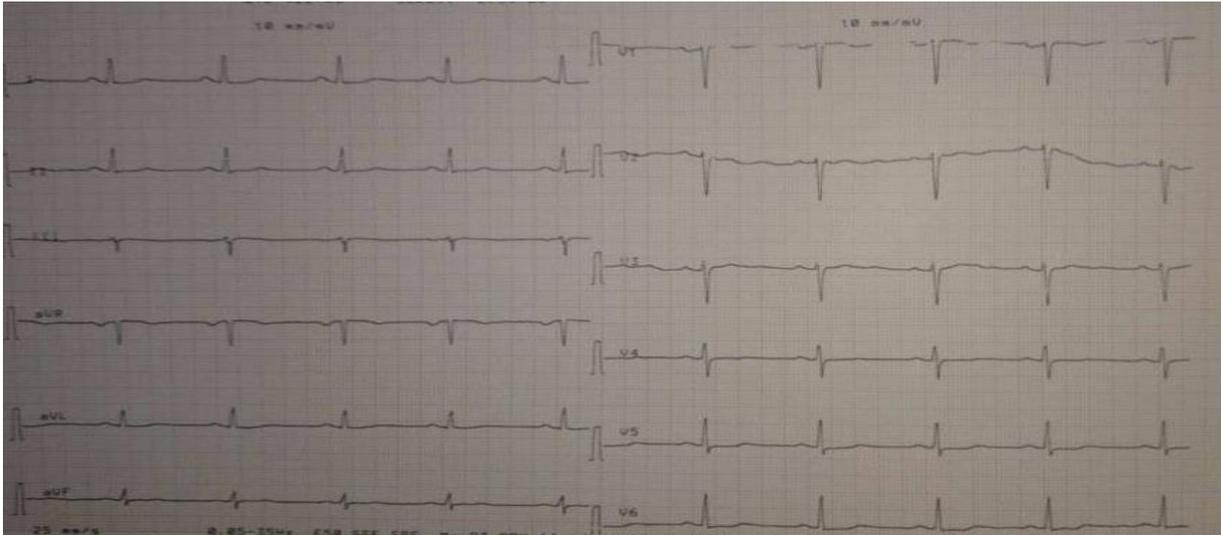


Fig 1: Start ECG

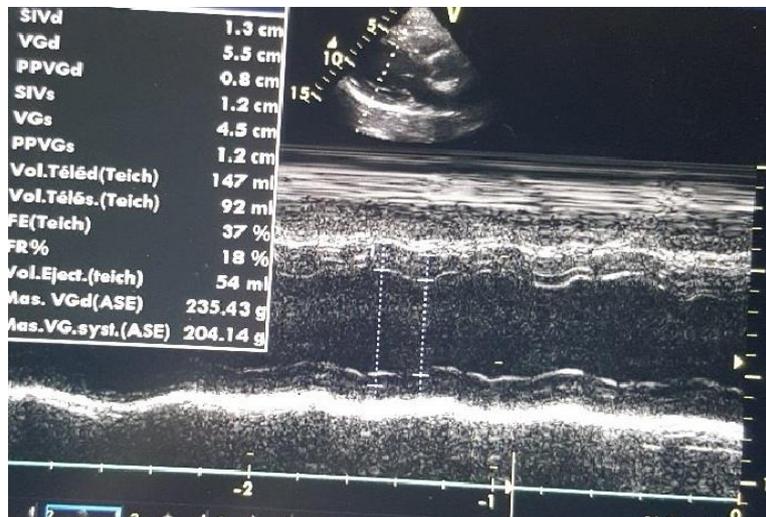
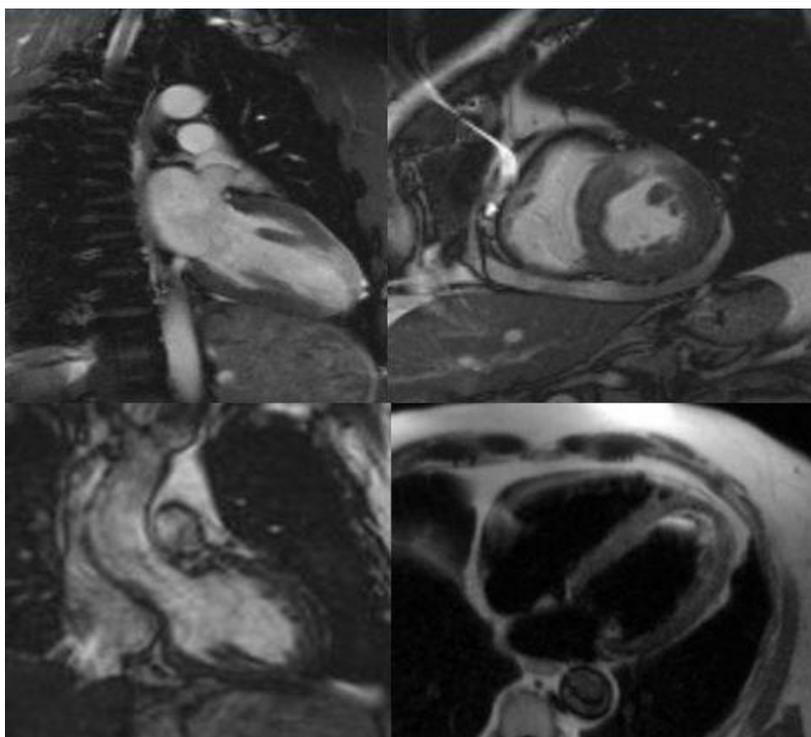


Fig 2: Ecocardiography great tax parasternal in mode TM



Fig 3: Cranial OAG incidence of a coronary angiography performed by left radial approach showing a healthy right coronary artery



**Fig 4: Cardiac MRI. Cuts of the heart in all planes of space. Study of the ejection fraction and the viability of the myocardium (perfusion)**

The patient was put on medical treatment, namely beta-blockers and ACE inhibitors, and then sent to his endocrinologist for optimal glycemetic control.

## DISCUSSION

Diabetic cardiomyopathy is defined as the onset of ventricular dysfunction left causing heart failure in a diabetic patient without coronary artery disease or hypertensive heart disease, or other etiology known heart failure [1]. Although still disputed as a pathological entity in its own right by some authors, diabetic cardiomyopathy finds an epidemiological reality demonstrated by many and broad studies. Epidemiological data currently seem sufficient to designate diabetes as an independent risk factor for the onset of heart failure [1]. Its path physiological mechanisms are multiple: myocardial lipid accumulation, mitochondrial dysfunction, low-grade inflammatory state, activation of the renin-angiotensin-aldosterone system favoring the appearance of myocardial fibrosis, and more recently, the possible involvement of certain micro-RNAs [1]. Long before reaching the stage of insufficiency. Early myocardial abnormalities, geometric, structural and functional, have been identified in cardiovascularly asymptomatic diabetic patients with no known heart disease and normal LVEF. The demonstration of these early myocardial abnormalities has been possible thanks to the improvement of non-invasive cardiac imaging techniques, mainly echocardiography and nuclear magnetic resonance techniques. Therefore, it is

frequently observed an increase in left ventricular mass, dysfunction and a decrease in the systolic deformation of the left ventricle, or Strain [2]. No hypoglycemic treatment has been shown to be effective in preventing or treating heart failure. Treatment of heart failure in diabetic patients is the same treatment as for non-diabetic subjects [2].

## CONCLUSION

Diabetic cardiomyopathy deserves to be better known. It is indeed responsible for the onset of heart failure which is initially related to diastolic dysfunction. The prognosis of heart failure is poor in diabetic patients. Earlier screening, allowing preventive measures to be put in place and the management of these patients to be adapted, is essential. This approach must be based on a strengthening of the collaboration between diabetologists and cardiologists, for the management of coronary disease in diabetics.

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