World Journal of Pharmaceutical and Life Sciences
WJPLS
www.wjpls.org
SJIF Impact Factor: 5.088

# SILENT MYOCARDIAL ISCHEMIA IN DIABETICS IN CONAKRY

**Djibril Sylla[1], Ibrahima Sory 2 Sylla[2]*, Amadou Kaké[3], Ibrahima Camara[3], Aissatou Barry[2], Elhadj Yaya Baldé[2], Alpha Sank Diallo[4], Mamadou Aliou Baldé[2], Mohamed Doumbouya[2], Aissatou Samba Guindo[5], Mariame Béavogui[2], Mamadou Dadhi Baldé[2] and Mamadi Condé[2]**

[1]Medico-Surgical Emergencies Department, Hospital Donka, Guinea.
[2]Cardiology Department, Hospital Conakry, Guinea.
[3]Diabetology and Metabolic Diseases Department, Hospital Donka, Guinea.
[4]Internal Medicine Department, Hospital Donka, Guinea.
[5]Cardiology Department, Hospital Libreville, Gabon.

***Corresponding Author: Ibrahima Sory 2 Sylla**
Cardiology Department, Hospital Conakry, Guinea.

**Article Received on 14/03/2018** **Article Revised on 04/04/2018** **Article Accepted on 25/04/2018**

## ABSTRACT

**Introduction:** coronary heart disease is the leading cause of death in diabetic patients. **Objective:** To describe the epidemiological and diagnostic aspects of silent myocardial ischemia in diabetic patients in Conakry. **Patients and methods:** prospective and descriptive study lasting six (6) months (from May 1st to October 31st, 2017) in the medical and surgical emergency department of the Donka National University Hospital. The study focused on type 2 diabetic patients seen in outpatients who had an electrocardiogram. We also took into account certain risk factors such as: high blood pressure, smoking, abdominal obesity and dyslipidemia. **Results:** in total, 111 patients with type 2 diabetes, which we divided into two groups: patients with abnormal resting ECG (71) 64% and those with a normal resting ECG (40) 36%. The mean age of the patients was 54 ± 15 years. The electrical abnormalities were represented by: 07 epicardial lesions (9.85%); 11 cases of endocardial lesions (15.45%); 14 epicardial ischemic cases (19.72%), 12 cases of endocardial ischemia (16.96%) and 27 cases of necrosis (38.02%). The cardiovascular risk factors that were associated with the ischemic resting ECG were: hypertension ($p$ = 0.03), abdominal obesity ($p$ = 0.04), smoking ($p$ = 0.02), and dyslipidemia ($p$ = 0.01). **Conclusion:** this study confirms the reality of silent myocardial ischemia in Conakry with a frequency of 64% and the electrocardiogram is the first means of diagnosis.

**KEYWORDS:** diabetes, silent ischemia, Conakry.

## INTRODUCTION

Cardiovascular disease is the leading cause of death and disability among people with diabetes.[1] In some studies, ischemic coronary artery disease accounts for up to 65% to 80% of deaths in diabetic patients.[2] At the same time, as the incidence of type 2 diabetes is growing exponentially, optimal management of ischemic cardiovascular disease is an important issue but remains unclear. It is recognized that the diabetic patient has at least 2 times more silent myocardial ischemia (IMS) type 1 (asymptomatic patients without a history of myocardial infarction) than the non-diabetic.[3] As a result, symptoms may be difficult to interpret (atypical angina) or even absent. Silent myocardial ischemia have higher incidence in type 2 diabetes and affects approximately 25% of patients.[3,4] The exploration of cardiovascular abnormalities in diabetics requires performing means including the resting electrocardiogram (ECG), myocardial scintigraphy, stress echocardiography, coronarography.[5] However, although it is of poor predictive value, the resting ECG remains an important step in the detection of coronary artery disease. However, an abnormality of the resting ECG has an indisputable prognostic value and should lead to further investigation.[6] Despite its systematic indication in diabetics, its use is most often rationalized especially in developing countries.[7] It seemed essential tous to do this work whose objective was to describe the epidemiological and diagnostic aspects of silent myocardial ischemia in diabetics in Conakry.

## PATIENTS AND METHODS

This is a prospective and descriptive study lasting six (6) months (from May 1st to October 31st, 2017) in the medical and surgical emergency department of the Donka National University Hospital. The study focused on outpatient type 2 diabetic patients who had a resting electrocardiogram during this period. All our patients were interviewed for the collection of anthropometric data, had a thorough physical examination and the

resting ECG analysis recorded on a CARDIMAX 6-track device by the same operator. The diagnosis of silent myocardial ischemia was retained based on electrical changes in an asymptomatic diabetic patient. These electrical abnormalities were represented by ischemia, lesions and necrosis. In addition to the resting ECG, we also took into account certain cardiovascular risk factors such as: high blood pressure defined by blood pressure systolic ≥ 140 mmHg and or diastolic blood pressure ≥ 90 mmHg treated or untreated; active or weaned smoking for at least 3 years; abdominal obesity (waist circumference greater than 102 cm in men and greater than 88 cm in women); dyslipidemia (total cholesterol ≥ 2g / l, triglycerides ≥ 1g / l, HDL cholesterol <0.4 g / l) with an LDL cholesterol target <0.7 g / l and micro albuminuria was achieved with a threshold considered positive for values between 30 and 300 mg / 24 h. Diabetic patients with heart failure, known or treated angina, and cardiomyopathy were not included in the study. The data were collected on pre-established cards after obtaining consent from the patient. We conducted extensive recruitment during the Monday to Friday workdays for all Type 2 diabetics seen outpatients. The analysis was done using the Epi Info software 5.1. For the comparison of two groups of qualitative variables, we used the chi-square test. It was considered significant with a $p$ <5%.

## RESULTS

We collected 111 type 2 diabetic patients, whom we divided into two groups: patients abnormal ECG rest (71) or 64% and those whose resting ECG was normal (40) or 36%. The mean age of the patients was 54 ± 15 years. The general characteristics of our patients are presented in Table I.

**Table I: Characteristics of the patients studied.**

| Settings | Effective | % | Average |
|---|---|---|---|
| Sex<br>Women<br>Men | <br>68<br>43 | <br>61,27<br>38,73 | |
| West size (cm)<br>Men >102<br>Women >88 | <br>11<br>27 | <br>15,49<br>38,02 | |
| Duration of diabetis (year) | | | 12,05 ± 6,5 |
| Glycated hemoglobin (%) | | | 7,3 ± 1,07 |

We collected 71 patients with electrical abnormalities, we noted: 07 cases of subepicardial lesions (9.85%); 11 cases of endocardial lesions (15.45%); 14 cases of epicardial ischemia (19.72%), 12 cases of endocardial ischemia (16.96%) and 27 cases of necrosis (38.02%). ECG of ischemic rest were: hypertension ($p$ = 0.03), abdominal obesity ($p$ = 0.04), smoking ($p$ = 0.02) and dyslipidemia ($p$ = 0.01) Table II.

**Table II: Factors Associated with Ischemia.**

| Ischemic ECG (40) | Normal ECG (71) | | | | |
|---|---|---|---|---|---|
| | Effective | % | Effective | % | *P* |
| High blood pressure | 68 | 96 | 29 | 72,5 | *0,03* |
| abdominal obesity | 38 | 53,5 | 12 | 30 | *0,04* |
| smoking | 27 | 38 | 14 | 35 | *0,02* |
| Dyslipidemia | 21 | 29,58 | 10 | 25 | *0,01* |

## DISCUSION

Silent myocardial ischemia is a reality in Africa but also in Guinea.

A frequency of 64% found in our study is higher than that reported by some African authors including: Dionadji in Chad who reported a prevalence of 49.61%,[7] Dago Koffi at CHU de Yopougon found a frequency of 51.41%.[8] This difference could be related to the size of our sample, which is relatively small. Previous studies, whether African or international, have reported lower prevalences. Thus, Berriche in Morocco and Mounen in Tunisia found respectively 30 and 32.1%,[9,10] Guensi in France and Debbabi in Belgium reported prevalence of silent myocardial ischemia respectively in 29 and 26.4%.[11,12] This disparity in the results seems to be related to the presence of other diagnostic means including scintigraphy but especially the coronarography which is the gold standard. The female predominance is constant in the silent myocarditis ischemia of the diabetic in the literature,[2,7,13] which is the case in our study where we found 41 women for 30 men. In addition, obesity plays an important role in this condition because it is perceived in our regions as a symbol of social and marital well-being. In our study, the majority of our patients were asymptomatic and the resting ECG allowed us to screen for SMI. Nowadays, we know that the resting ECG is no longer sufficient to diagnose SMI. Some asymptomatic diabetic subjects may have severe multi-truncal coronary artery disease according to the recommendations of the Francophone Society of Diabetes (SFD) and the French Society of Cardiology (SFC).[14] In addition to the electrocardiogram we have other diagnostic means including stress test, stress echocardiography with dobutamine. However, it should be noted that there is still no coronarography room in our country for the

diagnosis of ischemic heart disease. Thus, the resting ECG remains indicated as the first step in detecting coronary disease in diabetics.[15] Regarding electrical anomalies, 38% of our patients had sequelae of necrosis followed by epicardial ischemia and sub-endocardial ischemia, respectively 19.72% and 16.96%. On the other hand, Dago Koffi at Yopougon University Hospital found a much higher frequency of epicardial ischemia and endocardial ischemia at 52.15% and 42.75%.[8] This result could be explained in our context. by the fact that most of our patients were treated in diabetology and that they consulted us as part of the follow-up of their diabetes. In our work we found a marked correlation between the Ischemic Resting Electrocardiogram and certain risk factors, notably: arterial hypertension ($P$ = 0.03), smoking ($P$ = 0.02), obesity ($P$ = 0.04) and dyslipidemia ($P$ = 0.01). These risk factors are from those listed in the list of indications for coronary heart disease screening by ALFE DIAM and the American Diabetes Association (ADA).[16] Some authors have reached these same conclusions.[7,8,17] All these risk factors play a more or less determining role in the occurrence of cardiovascular complications in diabetics: Hypertension is a major risk factor for left ventricular hypertrophy, and left ventricular hypertrophy is a risk factor independent for coronary insufficiency and heart failure. Smoking promotes the development of atherosclerosis and increases the risk of cardiovascular mortality in diabetics. Obesity itself in relation to sedentary lifestyle and weight gain in women after maternity is important in diabetic patients with cardiovascular disease. There is also a relationship between the existence of an SMI and cardiovascular risk, particularly coronary risk. Thus, after age 60, the relative risk of the subsequent onset of a major cardiac event is 3 times higher for diabetics with SMI than for diabetics without SMI.[18] Indeed, significant coronary stenosis is found in only 30% to 60% of patients with an SMI. This discrepancy may be due to endothelial dysfunction, which is responsible for a decrease in coronary flow in more than 50% of patients with SMI with angiographically healthy coronaries.[20] This would explain the poor reproducibility of myocardial scintigraphy as found in the DIAD study.[20] With respect to the duration of diabetes 60.4% of our patients had a duration of progression of their diabetes between 5 and 10 years and 33.3% between 10 and 15 years. In addition, a duration of more than 10 years plus other risk factors constitutes classic indications for screening.[14]

## CONCLUSION

This study revealed that silent myocardial ischemia of diabetics is a reality in Conakry. We used only the resting electrocardiogram as a diagnostic tool. However, other diagnostic means should be used including coronagraphy in case of doubt. Nevertheless, the ECG still retains an indispensable place, especially in low-income countries, for screening for this condition.

## CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

## REFERENCES


1. Grimaldi A, Heurtier A. Epidémiologie des complications cardio-vasculaires du diabète. Diabetes & Metabolism, 1999; 25(3): 12-20.
2. Moret M, Moulin P. Dépistage de l'ischémie myocardiquesilencieuse des patients diabétiques : modalités et enjeux, EMC - Endocrinologie-Nutrition, 2012; 9(3): 10-366-J-30.
3. Koistinen MJ. Prevalence of asymptomaticmyocar dialischemia in diabeticsubjects.BMJ, 1990; 301: 92-95.
4. Langer A, Freeman MR, Josse RG et al. Detection of myocardialischemia in diabetesmellitus. Am J Cardiol, 1991; 67: 1073-1078.
5. Ruiz J, Keller CL, Bulliard C. Prévention et dépistage de la maladie coronarienne chez le patient diabétique Bull. Med. Suisses, 2000; 81: 2596-2600.
6. Nave S, Barrett Connor E, Wingard DL. Resting electrocardiographic abnormalities suggestive of asymptomatic ischemic heart disease associated with non-insulin-dependent diabetes mellitus in a defined population. Circulation, 1990; 81: 899-906.
7. Dionadji M, Lamlad L, Achbi S, Belhous S, Boudiba A. Facteurs associes à l'ischémie vue à l'électrocardiogramme de repos chez les diabétiques type 2. Mali Médical, 2010; 25(4): 4-6.
8. Dago Koffi P, Hue A, Yao A et al. L'ischemie myocardique silencieuse du diabétique au Service de Diabétologie du CHU de Yopougon, Abidjan. Annales de l'Université Marien NGOUABI, 2017; 17(1): 56-63.
9. Berriche O, Sahnoun M, Larbi F, Younes S, Hammani S. Cardiopathie ischémique chez les patients diabétiques. à propos d'une série de 100 diabétiques. Ann. Endocr, 2015; 76(4): 543-544.
10. Moumen A, Meftah A, Benkamcem M, Eljadi H. Faut-il encore dépister l'ischémie myocardique silencieuse chez le patient diabétique ? Ann. Endocr, 2014; 75(6): 375-376.
11. Guensi A., Tolo S. Chabrou M. Ischémie myocardique diabétique : Apports de la scintigraphie myocardique de perfusion. Médecine Nucléaire, 2013; 12: 569-577.
12. Debbabi W., Fakhfakh M.F, Kharrat I. L'ischémie myocardique chez les patients diabétiques de type Diabetes. Metab, 2014; 40: 38-39.
13. Marciano C, Galderisi M, Gargiulo P et al. Effects of type 2 diabetesmellitus oncoronarymicrova scularfunction andmyocardial perfusion in patients without obstructive coronaryarterydisease. Eur J Nucl Med Mol Imaging, 2012; 39(7): 1199-1206.
14. Paul J Valensi S, Vanzetto G, Lassmann V, Identification de l'ischémie myocardique chez du diabétique recommandation conjointes SFC/ ALFEDIAM. Arch. mal. Coeur Vx, 2004; 97(4): 125-127.

15. Moumen A, Meftah A, Chekdoufi S. Dépistage de l'ischémie myocardique silencieuse chez le patient diabétique : stop ou encore ? Diabetes. Metab, 2015; 41: A40.
16. Grundy SM, Howard B, Smith S et al. Preventionconference VI: Diabetes and cardiovasculardisease; Circulation, 2002; 105: 2231-9.
17. Lihoui M, Boughzala E, Ben Farhat M et al. Distribution des facteurs de risque cardio-vasculaires chez des patients coronariens dans le sahel tunisien. La Revue de Santé de la Méditerranée orientale, 2007; 13(3): 536-543.
18. Valensi P. Predictive value of silentmyocardiali schemia in diabetics patients. Influence of age. Diabetologia, 2000; 43(S1): A61.
19. Le Feuvre CL, Barthelemy O, Dubois-Laforgue D. Stress myocardialscintigraphy and dobutamineechocardiography in the detection of coronarydisease in asymptomatic patients with type 2 diabetes. Diabetes Metab, 2005; 31: 135-42.
20. Wackers FJ, Young LH, Inzucchi SE. Detection of silentmyocardialischemia in asymptomaticdiabeticsubjects: the DIAD study. Diabetes Care, 2004; 27: 1954-61.