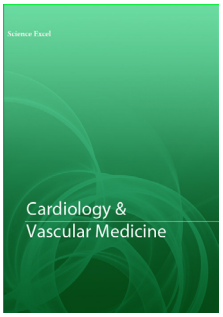
Cardiology and Vascular Medicine

Original Article



Knowledge and perception of coronary angiography and coronary angioplasty by physicians involved in the management of cardiovascular emergencies in Togo

Yaovi Mignazonzon Afassinou[1*], Souleymane Pessinaba[1], Borgatia Atta[2], Cuma Vianney Barhinjibanwa[1], Hervé Liberus Ayewanou Edorh[1], Nansirine Oloude[1], Machihude Pio[2], Soodougoua Baragou[1], Findibe Damorou[1]

[1]Department of Medicine and Specialties, Faculty of Health Sciences, University of Lome, 01BP: 1515 Lome – Togo.
[2]Department of Medicine and Specialty, Faculty of Health Sciences, University of Kara, BP 404 Lome – Togo.

Correspondence

Afassinou Yaovi Mignazonzon

Department of Medicine and Specialties, Faculty of Health Sciences, University of Lome. 15BP 314 Lomé – Togo.

Tél : (00228) 90181892.

- Received Date: 16 Jan 2023
- Accepted Date: 07 Feb 2023
- Publication Date: 20 Feb 2023

Keywords

Coronary angiography, angioplasty, Lome, Togo.

Abstract

Objectives: Interventional cardiology is emerging in Togo. The aim of this study is to assess the knowledge and attitudes regarding coronary angiography and angioplasty of physicians involved in the management of cardiovascular emergencies in Togo.

Materials and methods: This was a cross-sectional study that was conducted for three months from January 15 to June 30, 2022 and that focused on doctors involved in the management of cardiovascular emergencies in Togo, who volunteered to participate in the study.

Results: We interviewed 150 doctors with an average age of 32.8 5.6 years. Eight (10.7%) physicians reported having no knowledge of coronary angiography. All physicians recognized acute coronary syndromes (ACS) with persistent ST-segment elevation, the positive myocardial ischemia test as an indication of coronary angiography. Indications of coronary angiography, such as ventricular rhythm disorders, unexplained heart failure and stable angina were not well understood by 20 (13.3%), 19 (12.7%) and 9 (6.0%) respectively. All doctors knew that angioplasty could be accompanied by complications, but 48% were unaware of the skin complications of irradiation. The availability of coronary angiography and angioplasty in cardiac practice in Togo was ignored by 23 physicians or 15.3%. Coronary angiography and coronary angioplasty were perceived as very expensive by 70.7% of physicians. The cost of these procedures was a barrier to their prescription among 78 doctors (52. %).

Conclusion: Coronary interventional cardiology is performed routinely in Togo. Physicians involved in the management of cardiovascular emergencies have a level of knowledge and attitudes that need to be improved.

Introduction

Coronary artery disease is one of the leading causes of morbid-mortality of cardiovascular disease worldwide. According to the World Health Organization (WHO), 8.9 million deaths were due to coronary heart disease in 2019 [1]. More than three-quarters of these deaths are attributed to low- and middle-income countries. WHO forecasts that there will be 23.4 million cardiovascular deaths worldwide by 2030 [1]. Indeed, in recent years, developing countries have been experiencing an epidemiological transition with a rapid increase in cardiovascular diseases, which are gradually taking precedence over infectious diseases [1].

The prevalence of coronary artery disease is estimated at 3.9% in France with an estimated 46,000 deaths per year [2]. In Côte d'Ivoire, the prevalence of acute coronary syndrome was 13.5% in 2013 at the Abidjan Heart Institute [3]. In Benin, the prevalence of coronary artery disease among survivors of stroke was estimated at 49.5% between 2012 and 2019 [4]. In Togo between 2006 and 2010, the mortality rate related to cardiovascular disease increased from 5.2% to 11.4%; acute coronary syndrome represented 7.3% of reason for hospitalization [5].

A variety of medical imaging devices allow the exploration of coronary artery disease, including coronary angiography which is the reference examination. This coronary angiography is more broadly integrated into interventional cardiology, which has seen a considerable rise in West Africa in recent years with the beginning of operations in Togo since two years. Despite this progress in Togo, interventional cardiology remains poorly understood by Togolese practitioners.

Citation: Afassinou YM, Pessinaba S, Atta B, et al. Knowledge and perception of coronary angiography and coronary angioplasty by physicians involved in the management of cardiovascular emergencies in Togo. Cardiol Vasc Med. 2023;3(1):1-5.

This is the reason for this work, which has the general objective of assessing the knowledge and perception of interventional cardiology by doctors involved in the management of cardiovascular emergencies in Togo.

Materials & Methods

The study was conducted at Togo's health centres from January 15 to June 30, 2022. It was a cross-sectional study in public and private healthcare institutions in Togo. Were included in this study, physicians involved in the management of cardiovascular emergencies who voluntarily agreed to participate in the study. These physicians included cardiologists, cardiology doctors in training, internists, internal medicine doctors in training, anaesthetist/intensive care specialists, emergency physicians and general practitioners involved in the management of patients in an emergency department. Cardiologists performing interventional cardiology and physicians who did not consent to participate in this study were not included.

The data was collected from a pre-established survey sheet sent to physicians. The parameters studied were : the identity of doctors (age, sex, specialty, exercise health structure, country of medical training), theoretical knowledge in coronary angiography and coronary angioplasty, perception of these activities in Togo (existence, cost, limitation of prescription).

We used EPI INFO version 7.2.2.6. software for the statistic analyses of the data. Quantitative variables are presented in form of average, more or less standard deviation. We used the ANOVA test to compare them. Variables in terms of quality and category are presented in form of numbers and percentages. They were compared through the Chi-2 test of Mantel-Haenszel or the exact test of Fischer. For each test, we consider a value of $p < 0.05$ as significant.

Results

We invited 165 doctors to be part of this study. One hundred and fifty doctors responded to the questionnaires, for a response rate of 90%. Of the 150 physicians included in this study, 74 were in cardiology (cardiologists and physicians specializing in cardiology), 16 Internal Medicine (internists and physicians specializing in internal medicine), 2 anesthesiologists-resuscitators, and 58 general practitioners involved in the emergency management of patients. The sex ratio was 2.33 in favor of men. The average age was 32.8 ± 5.6 years with extremes of 25 and 58 years. Ninety decimal seven per cent of the doctors had completed their medical studies in Togo. Physicians working only in public hospitals were 66.7% (Figure 1).

Eight physicians (10.7%) reported being unfamiliar with coronary angiography. Knowledge of coronary angiography was acquired in 83.6% in Togo, during university studies in 80.6% of cases. All physicians recognized acute coronary syndromes without persistent ST-segment elevation, positive myocardial ischemic test as an indication of coronary angiography. However a ventricular rhythm disorder, unexplained heart failure and a stable angina were ignored respectively by 20 (13.3%), 19 (12.7%) 9 (6.0%) doctors as an indication to coronary angiography (Table 1). For one-third of physicians, fibrinolysis was the preferred means of revascularization of acute myocardial infarction (Figure 2). There were 122 doctors (82.7%) who reported that it was necessary to perform coronary angiography after successful fibrinolysis. Six of them (4.8%) said they did not know how long this coronary angiography took in relation to thrombolysis.

Twenty-two physicians (14.7%) said they were unaware that patients with a late myocardial infarction should receive coronary angiography. All doctors knew that angioplasty could be accompanied by complications. The most ignored complications included skin complications from radiation, death and kidney failure (Table 2).

The availability of coronary and coronary angioplasty in cardiological practice in Togo was ignored by 23 physicians, or 15.3%. In our sample, 59 (39.3%) physicians performed at least one post-angioplasty follow-up of patients and 50 (33.3%) performed post-angioplasty follow-up of coronary patients. One hundred and twenty-seven (84.7%) physicians have never attended a coronary angiography and among physicians who have ever attended a coronary angiography, 16 (10.7%) have attended in Togo.

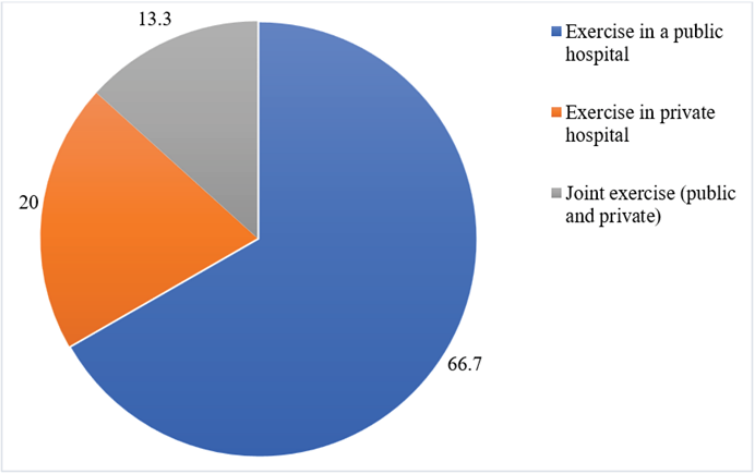


Figure 1. *Distribution of physicians according to location of practice*

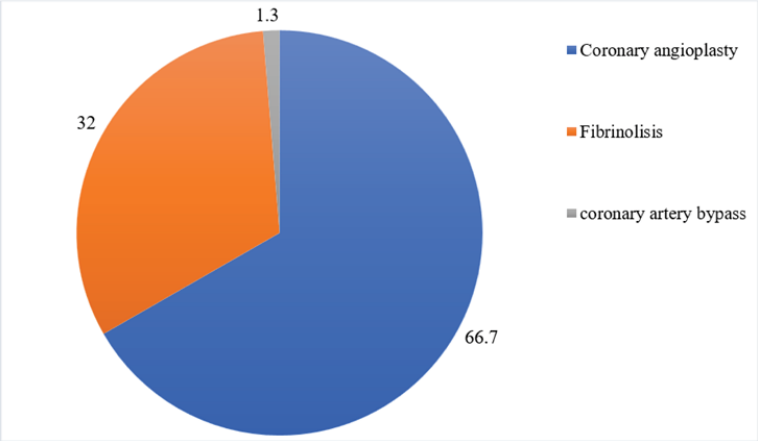


Figure 2. *Preferred revascularisation methods of ACS with ST elevation*

Table 1. *Distribution of Unknown Indications of Coronary Angiography*

	n	%
Ventricular rhythm disorder (TV, FV)	20	13,3
Unexplained heart failure	19	12,7
preoperative assessment of congenital heart disease	14	9,3
Stable angor	9	6,0
Preoperative assessment of heavy cardiovascular surgery (valvular surgery, resection of an aortic aneurysm)	8	5,3
Acute coronary syndrome without ST-segment elevation	1	0,7
Acute coronary syndrome with ST-segment elevation	0	0,0
Positive myocardial ischemic test	0	0,0
Post-angioplasty restenosis	0	0,0

TV: Ventricular tachycardia; FV: ventricular fibrillation.

Table 2. *Distribution of missed coronary angioplasty complications*

	n	%
Skin complications related to irradiation	72	48,0
Death	60	40,0
Renal failure	50	33,3
Ventricular rhythm disorders	45	30,0
Stroke	42	28,0
Allergic complications	40	26,7
Vascular lesions	38	25,3
Bleeding	30	20,0
Stent thrombosis	20	13,3

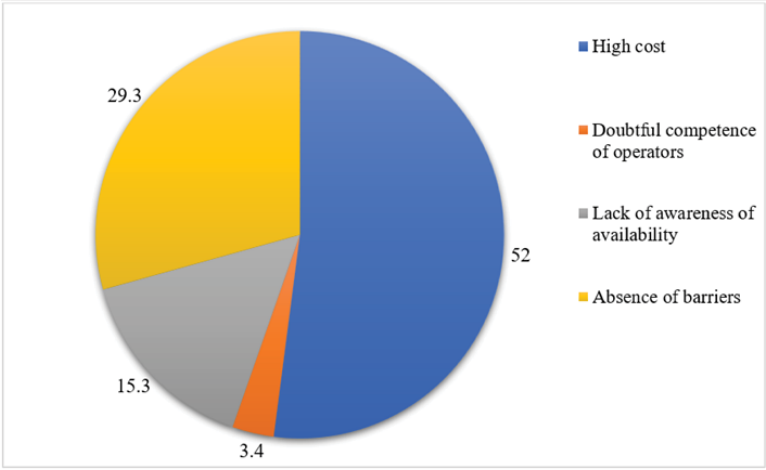


Figure 3. *Factors limiting the prescription of coronary angiography in Togo*

All physicians interviewed stated that they were satisfied that:

- the interest of coronary angiography and angioplasty in the management of coronary heart disease,
- the need for coronary angiography in the common practice of cardiology and especially in public health structures.

Coronary angiography and/or coronary angioplasty procedures in Togo were considered affordable for patients by 44 doctors (29.3%) and 106 doctors (70.7%) considered them very expensive; the cost of coronary angiography being 450,000 Franc of Financial Community of Africa (FCFA) (12.9 times the minimum wage) and coronary angioplasty being 1,200,000 FCFA (34.3 times the minimum wage)

Obstacles to the prescription of coronary angiography were the cost of the act in 78 (52%) (Figure 3).

Discussion

We interviewed 150 doctors with an average age of 32.8±5.6 years, of which 80.7% had completed their medical studies in Togo. The number of practitioners who responded to the questionnaires would have been greater if the questionnaires had been completed instantaneously. Card recovery meetings are not often tracked. These doctors are mostly young, which demonstrates the involvement of newly trained doctors in Togo in managing cardiovascular emergencies.

Eight physicians reported having no knowledge of coronary angioplasty or coronary angioplasty. This low physician complement demonstrates that despite the absence of interventional cardiology in cardiology practice, quality theoretical training has been provided to these physicians. The start of this activity since 2019 in Togo is an innovative factor that will improve the theoretical and above all, practical knowledge of these doctors involved in the management of cardiovascular emergencies.

All physicians knew that it is necessary to perform coronary surgery in acute coronary syndromes with persistent ST-segment elevation and 97.7% knew that coronary surgery was necessary in the acute coronary syndromes without persistent ST-segment elevation. The recommendations of the European Society of Cardiology [6, 7] are a basic tool for practice in this field in our community. They include clear and simple algorithms for the management of coronary emergencies that all doctors must appropriate. In addition to these recommendations, the indications for coronary angiography are well described and should be known [8]

All doctors knew about interventional cardiology procedures and especially angioplasty could be accompanied by complications, but 40% did not know that death could be a complication of angioplasty. Complications secondary to coronary angiography and coronary angioplasty are a worry for the interventional cardiologist [9]. Enormous progress has been made over the years on various techniques to optimize patient safety [10]. This makes the occurrence of complications in the interventional cardiology room low. It is essential that all actors involved in the chain of patient management appropriate to all the risks related to these acts in order to better orient patients and especially to reassure them. Physicians' knowledge of these risks requires training in the practice of interventional cardiology. Skin complications from X-ray exposure were the least known possible complications of coronary angioplasty. Irradiation of the interventional cardiology room staff as well as the patient is a concern for the interventional cardiologist. Skin involvement is one of the complications to be feared in the patient [11]. The reduction of the side effects of ionizing radiation in interventional cardiology requires compliance with the radiation protection measures required by good practice [12].

The availability of coronary and coronary angioplasty in cardiology in Togo was overlooked by 23 physicians, or 15.3%. Awareness work needs to be done to inform these doctors about these opportunities for cardiology management of patients.

One hundred and twenty-seven (84.7%) physicians have never attended a coronary angiography and among physicians who have ever attended a coronary angiography, 16 (10.7%) have attended in Togo. Indeed, this examination exists only in one structure in Togo and moreover private, access is not easy for all practitioners. Even doctors in training do not have this mandatory pathway in their practical training and those who come do so out of mere curiosity. The various prescribers of these cardiovascular explorations, should know and attend once these examinations in order to better explain to the patients and especially to prepare well the patients who will be addressed there. Interventional cardiologists need to stimulate these physicians through post-operative education. This is done through academic and practicum sessions to familiarize all physicians involved in the management of cardiovascular emergencies with these exams. The multiplication of interventional cardiology centers, especially in the public will have to facilitate access to doctors and especially patients.

All doctors interviewed stated that they were convinced of the importance of angioplasty in the management of coronary artery disease. These results are similar to those of Rothberg et al. [13] They observed that physicians were strongly convinced of the benefit of coronary angioplasty in the management of coronary artery disease and that they sometimes even had higher expectations of benefits than those demonstrated in randomized controlled trials.

All physicians interviewed stated that they were convinced of the need for coronary angiography in the common practice of cardiology and especially in public health structures. Coronary angiography and/or coronary angioplasty procedures in Togo were considered affordable for patients by 44 doctors (29.3%) and 106 doctors (70.7%) considered them very expensive. High cost was the main barrier to prescribing coronary angiography in 52% of physicians. In Togo, in common practice, the cost of a coronary angiography is 450,000 FCFA (12.9 times minimum wage) and that of a coronary angioplasty is 1,200,000 FCFA (34.3 times minimum wage) [14].

These rates are lower than those generated by a medical evacuation abroad, whether in the Maghreb or in Europe, where the costs are higher because of the added costs of travel and stay. Despite this, we must remember that the tariffs in our country are higher than those applied in other francophone West African countries with a coronary angiography room. For comparison, in Senegal, at the Aristide Le Dantec University Hospital in Dakar, the average price of a coronary angioplasty was 1,309,340 FCFA [15] or 22.3 times the Senegalese minimum wage [16]. At the Abidjan Heart Institute, the costs are even lower : coronary angiography: 150,000 CFA francs (2.5 times minimum wage); angioplasty: 670,000 FCFA (11.2 times the Ivorian minimum wage) [17].

These higher prices can be explained by the fact that in Togo, the only existing cathlab is in a private hospital, while the Aristide Le Dantec University Hospital in Dakar and the Abidjan Heart Institute are public hospitals. Indeed, it is observed that hospital costs in the public sector are lower

than those in the private sector [18]. In addition, the monopoly and therefore non-competition situation could favour these relatively high tariffs. Thus, the implementation in the public sector would promote lower rates and therefore accessible to a greater number of patients.

The limit of this study is not to have taken into account all the medical practitioners in Togo. Because the management of coronary disease requires the involvement of all medical personnel. But it has the credit of having taken into account many of the actors of emergency management in Togo. This work would have taken into account the proposals of these practitioners involved in emergency management. We feel that this should be part of great future work on the practice of interventional cardiology in Togo.

Conclusion

This cross-sectional study focused on the awareness and perception of coronary angiography and coronary angioplasty in physicians who manage cardiovascular emergencies in Togo. The majority of doctors included in the study were informed that coronary angiography was available in Togo. Less than a third have ever had a coronary angiography. More than half described coronary angiography and coronary angioplasty as very expensive and felt it was necessary to set up a public sector coronary angiography room in order to reduce this cost in order to make patients more accessible. The cost of the procedure was the main obstacle to prescribing coronary angiography. In order to inform and train health care personnel about the benefits of coronary angiography in the management of coronary heart disease, most doctors found the organization of scientific days relevant. The main suggestions put forward, in order to improve the services relating to coronary angiography and coronary angioplasty, were to set up a public sector coronary and coronary angioplasty room. Implementation of these suggestions would improve coronary artery disease management.

Acknowledgements

Thank you to the physician data collection team.

Conflicts of interest

None

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