



ORIGINAL RESEARCH PAPER

Cardiology

ACTIVITY REVIEW OF CORONAROGRAPHY AND ANGIOPLASTY A DEBUTANT CENTER IN SUB-SAHARAN AFRICA

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ABSTRACT

Introduction: Cardiovascular diseases, particularly coronary heart disease are the leading cause of death in the world with 17.5 million victims each year. Interventional cardiology with the advent of coronary angioplasty has quickly become a safe therapy whose indications continue to expand. The overall objective of our work was to take stock of the various coronarography and angioplasty activities at the cardiology clinic of Aristide Dantec hospital in Dakar Senegal.

Patients and methods: This was a single center retrospective and descriptive study over a period of 39 months (1 May 2013 to 1 July 2016) on patients with coronary angiography and / or angioplasty with complete medical records.

Results: Three hundred and ninety seven patients were included. The average age of our patients was 58.6 years with extremes of 21 and 89 years. The sex ratio was 3.3 in favor of men. Among the risk factors found, high blood pressure represented (46.1%), followed by diabetes (29.22%) and sedentary lifestyle 30.22%. At admission 44.6% had anginal pain. The electrocardiogram was sinus in 90.5% of cases. Doppler echocardiography showed an impaired LVEF in 27.7%. At angiography, the cumulative dose in scope was on average 1197.36 with extremes of 69 cGy and 10912cCy. A single-site lesion was noted in 43.65% of patients, a bitroncular lesion in 32.1% and tritroncular in a quarter of patients or 24.25%. Type C lesions were found in 17.37% of patients.

In angioplasty balloon predilatation was performed in 55.22%, direct stent apposition in 44.78% of cases. Active stents were the most used (60.6%). Incidents and accidents occurred in 25 patients of whom (10) presented with angina (2.63%), 5 patients had vagal discomfort and 3 had hemodynamic instability. We deplored 2 cases of death (0.53%).

Conclusion: Angioplasty in developing countries is an excellent therapeutic alternative in terms of cost, comfort and post-interventional follow-up. It is booming in sub-Saharan Africa, particularly in Senegal.

Introduction: Cardiovascular diseases are the leading cause of death in the world with 17.5 million victims each year [1]. Eighty per cent (80%) of deaths occur in low- and middle-income countries, and many of them affect adults of working age [1].

It is coronary artery disease that remains the leading cause of death in developed countries, accounting for almost 50% of annual deaths [1]. Cardiovascular pathology is one of the disciplines that have experienced the most spectacular diagnostic and therapeutic advances in recent decades [2]. Interventional cardiology with the advent of coronary angioplasty is one example. Continually relying on both technical and pharmacological improvements, the latter has quickly become a safe therapy whose indications are constantly expanding. Thus, through this study, we wanted to describe the activity report of coronarography and angioplasty in a new interventional cardiology center in Black Africa.

Patients and results: It was a monocentric, retrospective and descriptive study from 1st May 2013 to 1st July 2016 in the interventional cardiology unit of the cardiology clinic of the

Aristide Le Dantec University Hospital Center in Dakar. The study included any patient received or hospitalized in the cardiology department who got coronary angiography and / or angioplasty with complete medical records. The studied parameters concerned epidemiological, clinical, paraclinical, therapeutic and evolutionary data. The data had been entered with EXCEL version 2007 software. Data analysis was performed with SPSS version 20 software. The significance level was set conventionally at $p \leq 0.05$.

Results: Our total population was 397 patients with male predominance. The sex ratio was 3.3 in favor of men. The average age of our patients was 58.6 years with extremes of 21 and 89 years. The risk factors found were: high blood pressure (hypertension) (46.1%), followed by diabetes (29.22%) and sedentary lifestyle (30.22%); one quarter of the patients were smokers (25.19%) and 18.4% had dyslipidemias (Table I).

Overall, 95.22% of patients had at least two cardiovascular risk factors. A history of myocardial infarction (MI) was noted in 21.9%, the arterial disease of the lower limbs present in two patients the same number as ischemic stroke. The most frequent

symptomatology was anginal pain (44.6%) followed by dyspnea with exertion (5.53%). Nearly half of our population (49.1%) was asymptomatic at the time of the examination. The resting ECG recorded a sinus rhythm in 90.5%. At cardiac echocardiography, an impaired LVEF was noted in 27.7%. A correlation between impairment of LVEF and severity of coronary lesions ($p = 0.02$). The most used puncture was femoral right in 62.7%. The 6F waist sizes were the most used in 63.42% and the 6F angioplasty catheter in 80.68% of the patients. The cumulative dose in scope was on average 1197.36 with extremes of 69cGy and 10912cCy. The average duration of the procedure was 58 minutes 53 seconds with extremes of 2 and 212 minutes. A procedure duration <60 minutes was observed in 277 of our patients as 69.8% of the study population.

At angiography, left dominance was predominant. A single-site lesion was present in 43.65% of patients, a bitroncular involvement in 32.1% and tritroncular in a quarter of patients in 24.25%. Type C lesions were found in 17.37% of patients (Table II). The majority of angioplasties were performed in 90.70% of cases and urgently in 1.3% of cases (Table III). The most common technique used in angioplasty was balloon predilatation before insert of stenting in 55.22% followed by direct stenting in 44.78% of cases. Active stents were the most used in 60.6% of cases. Very few incidents and accidents occurred. This was angina (2.63%) in 10 patients, five patients had vagal discomfort and 3 had hemodynamic instability. We deplored 2 cases of death (0.53%).

Discussion: The presence of coronary lesions was found in 268 patients, a prevalence of 12.1%. Indeed, the CORONAFRIC study found a prevalence of coronary disease of 3.17% [3]. This disparity in our research may be explained by the fact that in Africa we currently have little epidemiological data on coronary heart disease which is in full swing. We found a male predominance (76.6%) with a sex ratio of 3.3 without any significant link with the severity of coronary involvement.

This same trend was found ABOLEY had found a sex ratio M / F higher at 6.1 [4]. MARCAGGI et al found a sex ratio of 2 [5]. The average age of our patients was 58.6 years with extremes of 21 and 89 years. This figure is higher than that found by ABOLEY (53.2 years) [4]. Hypertension was the main cardiovascular risk factor found (47.63%) with a significant link between hypertension and coronary involvement in patients with mono and truncl involvement. The prevalence of diabetes in our study was 30.26% with a significant link between the existence of diabetes and coronary involvement in bi and tri-truncl patients. Our results are superior to those of N'GUETTA et al (15%) [6].

Our results are similar to those of JACQURMIN et al (92.5%) [7].

Attenuation of the anterior and inferior territories in his patients accounted respectively for 52.4% and 22.2%, these results were practically the opposite of those found by JACQURMIN et al for whom 32.3% of the previous territory was reached and , 7% lower [7].

Acute coronary syndrome with persistent ST segment elevation (STEMI) was the first indication for coronary angiography in our patients (28.2%). This result is similar to those found in some series in Ivory coast (71.5%) [8], Kenya (56%) [9] and the FAST-MI register (57%) [10] but contrary to that found in the GRACE register, which reported a dominance of NTEMI in 63% of cases [7].

The femoral way was the most used (63.2%). The radial route was used in 30.5% of cases. DIOUM et al. found that the femoral approach was used in 86.1% of cases and radial in 13.8% [11]. This shows that progress is being made as to the use of the radial pathway which is recommended to reduce complications, particularly hemorrhagic complications, and with operators who have all been trained in France, in centers where the radial approach is the one used by default. Our study showed a monotruncular lesion in 28.9% of cases and bi and tri-truncl lesions were found in 22.1% and 17.8% of cases, respectively. MARCAGGI et al found tri-truncl involvement in 22% of cases,

which is comparable to our results [5].

Eighty-eight patients (22.17%) benefit from angioplasty and a total of one hundred and thirty-five (135) lesions treated with balloon dilatation and / or direct stenting. Our results are slightly inferior to those found by MARCAGGI et al (32.1%) [5]. Two primary angioplasties and five salvage angioplasties were performed. The programmed angioplasty was performed in 360 patients (90.7%) and 30 patients benefited of delayed angioplasty 7.5%. The immediate success of the procedure was achieved in 95.2% of our patients with a TIMI 3 flow and only 02 cases (1.9%) of no reflow had been observed, which is comparable to the results in the literature [5]. We recorded two (0.53%) deaths in the proceedings. This rate remains lower than those of DIOUM et al (0.87%), EKOU et al (3.4%) [11.6].

Conclusion: Coronary interventional cardiology is in full swing in sub-Saharan Africa, particularly in Senegal, and the first indication remains dominated by acute coronary syndrome with persistent ST segment elevation. Angioplasty improves the prognosis of patients. An awareness campaign should allow a better knowledge of the coronary pathology to allow an earlier and adapted care.

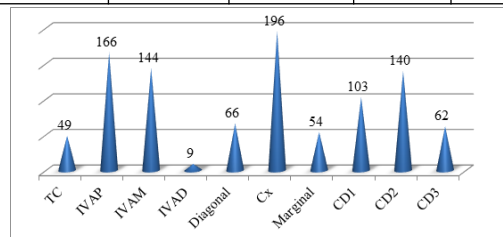
Conflict of interest: The authors declare that they have no conflict of interest.

Table I: Distribution of cardiovascular risk factors by gender

CVRF	Men	Female	Total	Percentage (%)
Age	266	61	327	82,37
Hypertension	121	62	183	46,10
Tabaco	97	3	100	25,19
Diabete	82	34	116	29,22
Dyslipidemia	52	21	73	18,39
Sedentary	65	55	120	30,23
Obesity	41	55	96	24,18
Ménopause	—	44	44	11,08
Heredity	34	8	42	10,58
Chronic Renal Failure	1	1	2	0,5

Table II: Distribution of lesions by severity

	Insignificant lesion <50%	Significant lesion [50%-70% [Lesion tight [70%-90[Injury Occlusive
Nombre	424	143	343	187
Percentage(%)	38,65	13,04	31,27	17,04



TC: common trunk, IVA: anterior interventricular, CX: circumflex, CD: right coronary

Figure 1: Distribution of lesions by seat

Table III: Distribution of Angioplasty by Programming

Clinical context	Fréquences	Pourcentage(%)
Transluminal-angioplasty-programmed	360	90,7
Transluminal-angioplasty primary	2	0,5
Transluminal-angioplasty rescue	5	1,3
Transluminal-angioplasty deferred	30	7,5
Total	397	100

Table IV: Immediate Results of Angioplasty

	Immediat success	No Reflow	Residual stenosis	Coronary dissection	Flux TIMI 3
Nombre	99	2	4	3	99
Percentage(%)	95,2	1,9	3,8	2,9	95,2

TIMI : Thrombolysis In Myocardial Infarction

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