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Review Article

Clinical and Angiographic Profile of Patients with Coronary Artery disease among Nigerians and Indians

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Abstract

Background: Coronary Artery Disease (CAD) in young and old individuals represents a special subsets that clinical profile and angiographic findings are different from older population. Better understanding of CAD in these groups of population would lead to further improvement in prevention and management. However, there are no data regarding coronary artery disease in Nigerian and Indian population. So this study was aimed to analyze the clinical profile and angiographic pattern of coronary artery disease among Nigerian and Indian patients.

Methods: Retrospective study was done in 190 adults of Nigerian and Indian Origin above 18 years of age. There were 48 Nigerians and 142 Indians. These patients underwent coronary angiography between 1st May 2016 to 31st October 2017 in India and between 1st November 2017 to 31st May 2018 in Yenegoa-Nigeria. Age grouping (Group I - < 40 years, Group II- 40 to 49 years, 50-59 years, 60-69 years and above 60years), clinical presentation, risk factors for CAD, angiographic findings and management strategy were analyzed.

Results: Group I patients represented 2% and 18.3% among the Nigerian and Indian patients respectively. Increasing age was significantly associated with the risk of developing CAD. Risk factors in both populations included tobacco use, smoking, dyslipidemia, DM, hypertension, sendatory life style and alcohol consumption were common to both population. Eight patients of Indian origin had Takayasu disease as risk factor which was not found among the Nigerian patients. Pattern of dyslipidemia was higher among the Indian patients. CAD sets in ealier among Indian as compared to Nigerian

patients. Involement of arterial vascular beds was more among the Indian than Nigerian subjects. Nigerian patients were managed with medical and PCI. The Indians subjects were manged with medical, PCI and CABG.

Conclusions: Risk factors for CAD among Indians and Nigerians were similar. Takayasu disease could affect the coronary artery but rare among Nigerians. Screening for risk factors should start at an earlier age, and smoking cessation, promotion of physical activities and healthy dietary pattern have to be strongly encouraged among these group.

Keywords: Angiography; Clinical profile; Coronary artery; Coronary artery disease

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Introduction

Coronary artery disease is one of the most common causes of mortality and morbidity in both developed as well as developing non-sub-Saharan African countries [1]. Together with stroke, it accounts for more than 50% of all deaths [2,3]. In sub-Saharan Africa (SSA), coronary artery dieases has generally been considered to be rare despite the deteriorating trends in the cardiovascular risk factors profile of populations across SSA with an increasing prevalence of major cardiovascular risk factors [3].

Coronary Artery Disease (CAD) tends to occur at a younger age, with more extensive angiographic involvement contributed genetic, conventional, metabolic as well as nonconventional risk factors [4,5]. Socio-economic changes that have occurred with industrialization and urbanization have probably led to the higher prevalence of the main cardiovascular risk factors [6,7]. With the wide variability in clinical presentations especially among different age group population and between the two sexes, there are also some differences regarding risk factors like hypertension, dyslipidemia, Diabetes Mellitus, smoking, alcohol consumption and race [4]. Significant differences in the prevalence of CAD (coronary artery disease) exist with respect to age, gender and ethnicity and race [4]. The objective of this retrospective study is assess clinical and angiographic profile of patients with Coronary Artery Disease among Nigerians and Indians.

Methods

Retrospective study was done in 190 adults of Nigerian and Indian Origin above 18 years of age. There were 48 Nigerians and 142 Indians. These patients underwent coronary angiography between 1st May 2016 to 31st July 2017 in India and between 1st November 2017 to 31st May 2018 in Yenagoa; Nigeria. Cardiac catheterization in Bayelsa state started at the Bayelsa Specialist Hospital in 2017 with referral from within and outside the state.

Patients with incomplete data and those with coronary artery disease but no performed coronary angiography were excluded from the study sample. A consecutive sampling procedure was used to enroll all those with eligibility criteria. The folders of the patients were assessed and information document with a structured.

Age grouping (Group I - < 40 years, Group II- 40 to 49 years, 50-59 years, 60-69 years and 70years and above), clinical presentation, risk factors for coronary angiography, angiographic findings and management strategy were analyzed. The data were analyzed with SPSS version 20.

Results

The number of subjects resulted were 190 participants. There were 48 Nigerian and 142 Indians. Among the Nigerians and Indians, increasing age tend to be more with coronary artery disease. This is shown in table 1. Group I patients represented 2% and 18.3% among the Nigerian and Indian patients respectively. Among the Nigerians patients, 37 has no significant coronary artery disease and 11 had significant coronary artery disease. While in the Indian patients, 113 had significant coronary artery disease. This is shown in table 1.

Age group (years)	Nigerian patients with CAD	without CAD	Indian patient with CAD	without CAD
<40	-	1 (2.7)	14 (12.4)	12 (41.4)
40-49	-	7 (18.9)	24 (21.2)	6 (20.7)
50-59	3 (27.3)	11 (29.7)	27 (23.9)	8 (27.6)
≥60	8 (72.7)	18 (48.6)	48 (42.5)	3 (10.3)

Table 1: Age category of Nigerian and Indian patients that presented to the clinic with history of chest pain.

CAD: Coronary Artery Disease.

Risk factors in both populations included tobacco use, smoking, dyslipidemia, DM, hypertension, sendatory lifestyle and alcohol consumption were common to both population. This is demonstrated in tables 2&3. Eight patients of Indian origin had Takayasu disease as risk factor which was not found among the Nigerian patients. Pattern of dyslipidemia was higher among the Indian patients. Figures 1-3 showed that symptom of coronary artery disease is chest. But the proportion of those presenting with chest pain were more in the Indian patients compared with the Nigerian patients.

	Nigerians (48)		Indians (142)	
CAD Risk Factor	Proportion among persons that presented with chest pain n (%)	Proportion among persons that were diagnosed with CAD n (%)	Proportion among persons that presented with chest pain n (%)	Proportion among persons that were diagnosed with CAD n (%)
Diabetes mellitus	26 (54.2)	8 (72.7)	68 (47.9)	76 (67.3)
Hypertension	20 (41.7)	6 (54.5)	54 (31.7)	67 (59.3)
Dyslipidaemia	36 (75.0)	10 (90.1)	111 (78.2)	103 (91.2)
Smoking	18 (37.5)	3 (27.3)	82 (57.7)	68 (60.2)
Past history of CAD	2 (4.2)	1 (9.1)	46 (32.4)	46 (40.7)
Past history of PTCA	1 (2.1)	-	32 (22.5)	17 (15.0)
Sedentary lifestyle	32 (66.7)	9 (81.8)	78 (54.9)	86 (76.1)
History of alcohol consumption	14 (29.2)	4 (36.4)	65 (45.8)	71 (62.8)

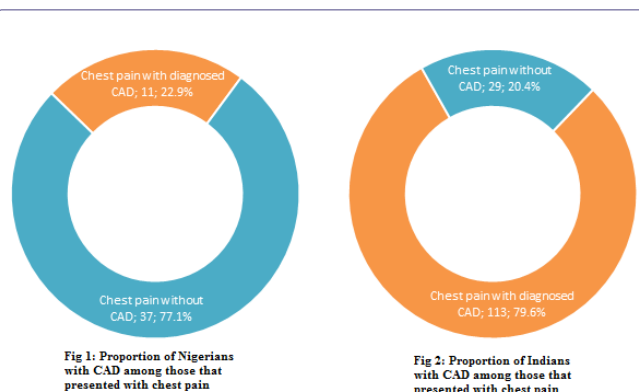|				
HIV/AIDS	1 (2.1)	1 (9.1)	-	-
Takayasu	-	-	8 (5.6)	8 (7.1))

Table 2: Proportion of CAD risk factors among Nigerians and Indians presenting with chest-pain.

PTCA (Percutaneous Transluminal Coronary Angioplasty); Coronary artery disease

	Nigerian Patients (11)			Indian Patients (113)		
Gender	SVD	DVD	TVD	SVD	DVD	TVD
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Male	3 (27.3)	1 (9.1)	1 (9.1)	36 (31.8)	20 (17.7)	12 (10.6)
Female	4 (36.3)	2 (18.2)	-	22 (19.5)	14 (12.4)	9 (8.0)
Total	7 (63.6)	3 (27.3)	1 (9.1)	58 (51.3)	34 (30.1)	21 (18.6)

Table 3: Pattern of Vessel Involvement among Nigerian and Indian patients diagnosed with CAD.

SVD (Single Vessel Disease); DVD (Double Vessel Disease); TVD (Triple Vessel Disease).

Fig 1: Proportion of Nigerians with CAD among those that presented with chest pain

Chest pain with diagnosed CAD; 11; 22.9%
Chest pain without CAD; 37; 77.1%

Fig 2: Proportion of Indians with CAD among those that presented with chest pain

Chest pain without CAD; 29; 20.4%
Chest pain with diagnosed CAD; 113; 79.6%

Figures 1&2: Proportion of Nigerians with CAD among those that presented with chest pain; Proportion of Indians with CAD among those that presented with chest pain.

Figure 3: Pattern of risk factors of CAD among Nigerian and Indian patients diagnosed with CAD.
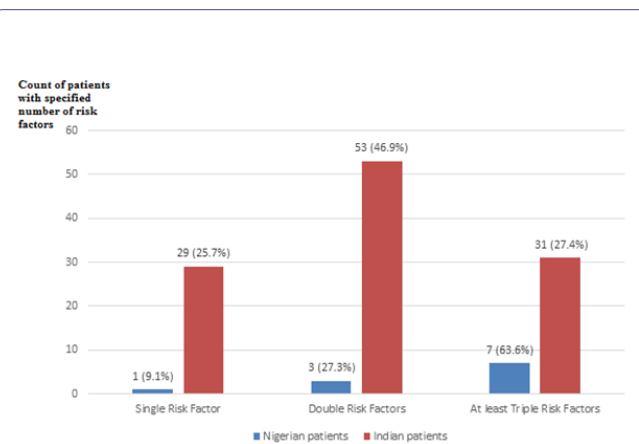
CAD sets in earlier among Indian as compared to Nigerian patients. Involvement of arterial vascular beds was more among the Indian than Nigerian subjects (Table 4). Nigerian patients were managed with medical and Percutaneous Coronary Intervention [PCI] and Coronary Artery By-pass [CABG]. The Indians subjects were managed with medical, PCI and CABG. In table 4, typical symptom of anterior wall chest pain with radiation to the left shoulder still the commonest form of presentation. Atypical presentation was seen in both subjects.

Symptom	Nigerian patients (11)	Indian populations (113)
	n (%)	n (%)
Typical chest pain	10 (90.9)	93 (82.3)
Atypical chest pain	2 (18.2)	20 (17.7)
Vomiting	1 (9.1)	11 (9.7)
Dyspnoea	3 (27.3)	26 (23.0)
Other symptoms		
Orthopnoea	2 (18.2)	18 (15.9)
PND	2 (18.2)	18 (15.9)
Leg swelling	1 (9.1)	11 (9.7)

Table 4: Symptomatology in Nigerian and Indian patients diagnosed with CAD.

Discussion

Coronary artery disease is widely prevalent both in the developed and developing countries and Continues to be a leading cause of mortality despite recent advances in diagnostic facilities and treatment modalities [8-10]. Our study was on Nigerian and Indian underoging coronary angiographies with aim on clinical characteristics, risk factors.

The study sample included 190 patients with slightly more 142 Indian sand 48 Nigerians. Adult with aged 18 years and above were included in the study. Increasing age was significantly associated with the risk of developing CAD in both Nigerian and Indians.

In this study as the risk factors, Diabetes Mellitus, Hypertension, dyslipidemia, smoking, Takayasu and HIV infection. Sharma et al found risk factors, dyslipidemia was found in 37.96% patients, obesity in 29.64% patients and family history of CAD as significant among 9.73% cases [11]. Similar to ours, hypertension was observed as the among the most prevalent risk factor (14.8%) followed by diabetes in 10.5%, smoking in 2.8% and dyslipidemia in 2.4% [12]. Another study showed the most prevalent risk factors were smoking in 60% and dyslipidaemia in 60%, HTN in 35%, DM in 10% patients [13].

Most patients in this study with signficant coronary artery disease presented with late symptoms. The commonest symptom being chest pain.

This high percentage of patients presenting acutely with advanced symptoms is in keeping with other studies on acute coronary syndrome and myocardial infarctions in black Africans [14-21]. Most clinical studies on CAD in Nigeria have detected CAD late, when it presents as myocardial infarction [17-23]. The INTERHEART study also showed that black Africans presented very late after symptoms [24]. These findings highlight a later presentation of disease in Nigerians and other black Africans which may represent a pervasive lack of prevention, early detection and treatment of the major risk factors. The clinical presentation were more early in Indians patients. The difference could be that the disease being more prevalence and also better awareness among the Indians subjects.

Analyzing the coronary angiography findings of our study people we observed that, 68% of the Nigerian subjects and 20% of the Indian subjects had normal coronary. This indicate the disease is far more prevalebnce among Indians than Nigerians. Mohammad found 35% with normal cornary arteries in a study of clinical characteristics, risk factors and angiographic profile of patients undergoing coronary angiography in a Tertiary Care Hospital [14].

Those with signfiant Coronary artery disease in the two study population, the proportion of SVD is highest and it is followed with DVD and TVD in this order. In a study of 150 cases, SVD was the most prevalent which was seen in 68.7% cases, followed by DVD in 22.6% and TVD in 8.7% cases and among the SVD cases, location of stenosis was seen in LAD in 41.3%, LCX in 10%, RCA in 15.3% and left main coronary artery in 2% cases [25]. An Indian study showed SVD in 57.1% of the patients followed by DVD in 11.5% and TVD in 7.1% cases [26]. Khadkikar GD, et al. found SVD, DVD, TVD and no vessel disease among 50%, 13.6%, 4.5% and 31.8% patients respectively [27]. Colkesen AY, et al. in their study on CAD in young adults also found LAD was the most commonly involved vessel, followed by RCA, LCX, and LMCA [28].

Conclusion

Risk factors for CAD among Indians and Nigerians were similar. Takayasu disease could affect the coronary artery but rare among Nigerians. Screening for risk factors should start at an earlier age, and smoking cessation, promotion of physical activities and healthy dietary pattern have to be strongly encouraged among these group.

Limitation of the Study

This was a retrospective study with small sized samples over a short peroid of time. So, the findings of this study may not reflect the exact scenario of these countries.

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