



Case Report

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Triple vessel coronary artery disease in a rural Nigerian: A reflection of poor diagnostic infrastructure or rarity in prevalence? A call for action

Akintunde Adeseye A^{1,2}, Olafiranye Oladipupo³

¹ Department of Medicine, Ladoke Akintola University of Technology, College of Health Sciences, Osogbo, Nigeria

² Goshen Heart Clinic, Osogbo, Nigeria

³ University of Pittsburgh School of Medicine, UPMC Heart and Vascular Institute, Pittsburgh, PA, USA

Abstract

The need for provision of more diagnostic facility for coronary angiography to diagnose coronary artery disease among Africans cannot be overemphasized as there is the possibility that coronary artery disease may not be as uncommon as it is presently estimated but may be manifesting with different phenotypic presentations compared to the Caucasians. We present an otherwise stable adult rural Nigerian with hypertension and diabetes who was diagnosed with a triple vessel disease and subsequently had coronary angioplasty and stenting with good effect.

Keywords: coronary artery disease, angioplasty, Stenting, Nigeria.

INTRODUCTION

Coronary artery disease is said to be the commonest cause of sudden death in developed countries [1, 2]. Estimates of prevalence have suggested that it is rarer among Africans as Africans tend to develop more of stroke than coronary artery disease [3-5]. However, the epidemiology of major cardiovascular risk factors accounting for the CAD burden in the INTERHEART study is similar between Africans and their Caucasian counterparts [6]. The burden of hypertension in the last decade has risen astronomically [7]. Dyslipidaemia, obesity, pre-diabetes and diabetes and hypertension appears to be clustered together in a large proportion of Nigerians [7-8]. It is possible that Africans may have a lower pain threshold compared to Caucasians and their report of chest pain associated clinical syndrome may be different. Some subjects with heart failure have been evaluated for ECG universal definition of myocardial infarction and a large proportion of them were found to have definitive ECG definition of old myocardial infarction even though they have not had the typical chest pain which could have suggested coronary artery disease [9]. In a review of 129 consecutive cases of heart failure subjects, Myocardial infarction (MI) on ECG was assessed using standardized criteria using the Third Universal definition of MI while relative wall motion abnormalities were assessed during echocardiography, Possible Coronary artery disease was identified in 18 (13.95%) of study participants and they were more likely to be significantly older, had a lower ejection fraction, a higher fasting blood sugar and a higher left ventricular chamber walls dimensions compared to those without possible CAD with a conclusion that CAD may be a significant contributor to the aetiology of heart failure subjects among Africans and it is important to look for possible significant coronary atherosclerosis and treat appropriately even among Africans with heart failure [3, 9-10].

It is therefore possible that many patients with coronary artery disease as a result of lack of appropriate diagnostic angiography could have been inadvertently managed for other co-manifestations in the disease spectrum such as heart failure, hypertensive heart disease etc. [9]. The availability of diagnostic angiography will further enable appropriate diagnosis and prevent progressive cardiovascular decline among Africans. The case report highlight an hypertensive subjects who was managed over a course of 5 years with various manifestations of acute decompensated heart failure, hypertensive-diabetic cardiomyopathy and ischaemic heart disease conservatively. He was scheduled for a cardiac mission subsidized program where coronary angiographies revealed a three vessel disease with severe coronary stenosis which was subsequently stented.

*Corresponding author:

Dr. Akintunde AA

Goshen Heart Clinic, Osogbo,
Nigeria

Email: iakintunde2@yahoo.com

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CASE REPORT

Mr. OTT, a 65 year old retired civil servant from the state civil service was seen in a private cardiology clinic about six years ago having being diagnosed as being hypertensive two years earlier. His major complaints were that of chest discomfort which was said to be activity related, relieved by rest and radiating to the shoulders. There was associated history of easy fatigability on moderate exertion. He was not previously diagnosed diabetic and was not well compliant with his medications before presentation. There was associated history of cough, productive of whitish frothy sputum, no orthopnea and no paroxysmal nocturnal dyspnea

Examination revealed an elderly man, whose general condition was satisfactory, obese, body mass index 32kg/m², waist circumference was 118 cm, not pale and no pedal oedema. Cardiovascular system examination revealed pulse rate of 76 beats/min, thickened arterial wall and visible locomotor brachialis. Blood pressure was 150/96mmHg. Heart sounds S₄, S₁ and S₂ were heard and there was no murmur. There were bibasal crepitations on the chest examination. The result of the investigations at the initial visit was 107 mg/dl, Total cholesterol 5.76mmol/l, Triglycerides- 1.57 mmol/l, Low density lipoprotein cholesterol-4.31 mmol/l, High density lipoprotein cholesterol 0.73mmol/l. The atherogenic index of plasma was 7.9. Electrocardiography revealed heart rate of 81/min normal sinus rhythm, axis=-30 deg, Left axis deviation, persistent S waves in V₅/V₆, ST segment elevation in V₁-V₃ and isolated ventricular premature beats. Echocardiography revealed concentric left ventricular hypertrophy, left atrial dilatation, ejection fraction Of 52%, biventricular diastolic dysfunction, moderate mitral and tricuspid regurgitation and left ventricular apical wall hypokinesia. He was subsequently commenced on medications including Lisinopril, Aspirin, Amlodipine, Simvastatin and Hydrochlorothiazide. Exercise stress test was positive using the Modified Bruce Protocol with exercise duration of 18 minutes and 72% maximal heart rate of expected achieved before patient developed chest discomfort.

Over the course of one to two years, type 2 diabetes mellitus was diagnosed and was subsequently managed with oral anti-diabetic agents including Metformin and Glibenclamide. He also had a history of transient ischaemic attack which spontaneously resolved in 2014 at which time his fasting blood sugar was 251mg/dl. Other significant medical and/or surgical history includes diagnosis of benign prostatic hypertrophy (still conservatively being managed) and diabetic foot disease (Wagner grade 1-2) in both legs. There was proteinuria on urinalysis, however, electrolytes, urea and creatinine were within normal limits. Other drugs that were included over time included carvedilol, atorvastatin, dual antiplatelet therapy of Clopidogrel and cardio Aspirin 100mg daily, Spironolactone and furosemide.

He has been conservatively managed with good improvement and a fair quality of life until January 2019 when the option of coronary angiography with intervention was discussed with the patient. An opportunity came with one of such mission organized at the Babcock University Teaching Hospital cardiac catheterization laboratory, Ilishan Remo, Ogun State Nigeria where patient had the procedure and was diagnosed with a triple vessel disease as shown in figure 1 with appropriate stenting in the three vessels with good effect as shown in figure 2 below.

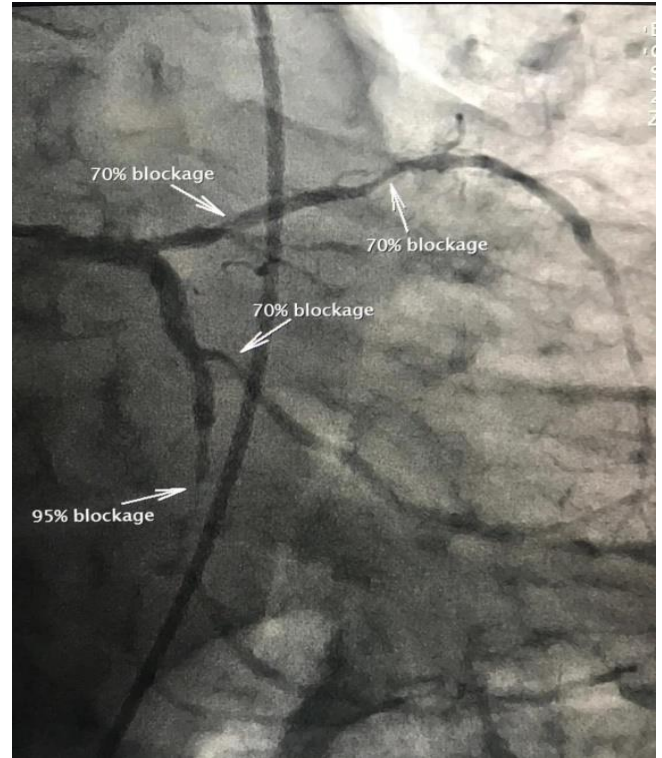


Figure 1: Showing at least 70% blockage in the three main coronary vessel: the left anterior descending, circumflex artery and the right coronary artery.

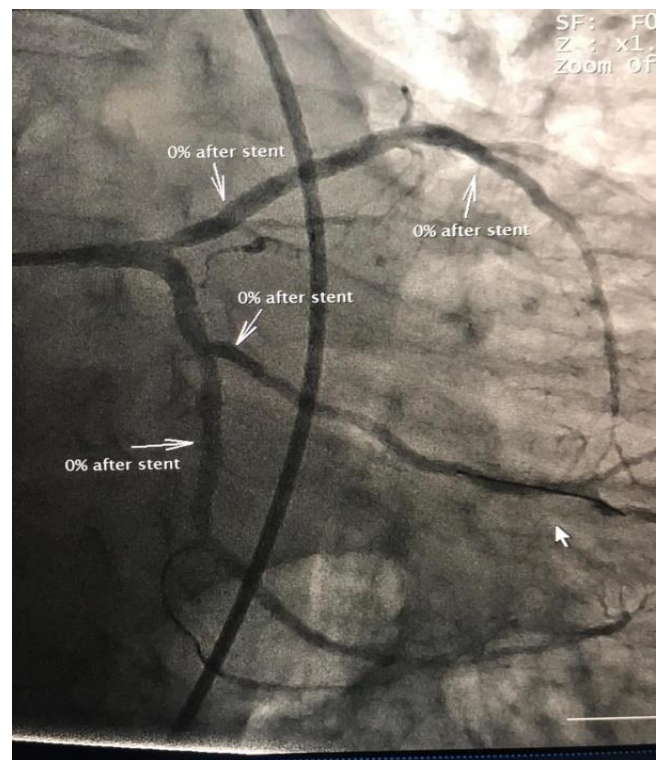


Figure 2: Showing complete revascularization after percutaneous coronary angioplasty and stenting

DISCUSSION

Reports about the presence of coronary artery disease have been in the literature for quite some time. In 1989, Ogunowo *et al.* reported 31 patients with coronary artery disease and they were closely related with risk factors including hypertension, diabetes, obesity and

dyslipidaemia despite the fact that CAD was said to be rare among Africans [13]. CAD have been reported to present unusually among Nigerians such as with recurrent syncope [14].

The recent global burden of disease estimates the contribution of coronary artery disease as minimal [15]. However, this may not be unconnected with the rarity of the disease but the fact that there are few diagnostic facilities for CAD in Nigeria. A recent review of autopsy cases of 747 coroner cases in south-south Nigeria revealed that CAD was diagnosed at autopsy in 13(1.6%) of all of them. Because of paucity of diagnostic and therapeutic facility for coronary angiography in Nigeria to confirm the diagnosis of CAD and offer appropriate interventional therapy, all these patients were missed and were on treatment for other co-existing diseases like the patient being presented here until it was diagnosed at autopsy [16]. In a review of all patients that underwent stand-alone percutaneous coronary interventions in a private clinic in Lagos, CAD was diagnosed in 52.6% of 152 Nigerians with an average age of 60.3 years and the prevalence of a three vessel disease in that cohort was 44.2% [17]. There is even an unmet need for coronary artery bypass graft surgery in those with three or more vessel disease. A report from south west Nigeria in 1996 had suggested that only 4% of deaths in an autopsy review were due to coronary artery disease [18]. Every available evidence suggests that this is increasing in an alarming proportion and there is a lot of under-diagnosis of coronary artery disease among many Nigerians due to poor access to diagnostic and therapeutic facilities.

Our patient has been on treatment for several comorbid diseases for about 5 years including hypertensive-diabetic cardiomyopathy, acute pulmonary oedema, heart failure an intercurrent infection. The complaints of chest discomfort and a positive exercise stress test was what prompted a search for a cost friendly cardiac mission program at the instance of members of the Nigerian Cardiac Society and foreign partners and then the discovery of advanced coronary stenosis in all the major vessels and percutaneous coronary angioplasty and stenting with good effect in the patient. It is our utmost belief that many patients hitherto being treated for many cardiovascular risk factors especially in combination could have significant coronary stenosis which could warrant PTCA and further salvage cardiovascular function over a long time.

This case among others highlights the potential burden of CAD in Nigeria where coronary angiography, PTCA and surgeries are still not available routinely available. It underscores the need to establish regional centers of excellence where coronary angiography and stenting with or without CABG will be available to diagnose and treat CAD as it continues to unfold in the coming years. It is only then that correct estimates of coronary artery disease can be rightly estimated and tackled appropriately.

CONCLUSION

CAD may be present in many Nigerians with major cardiovascular risk factors especially if in clusters. Access to coronary angiography will help determine the actual contribution of CAD to the country's burden of disease, provide access to diagnosis and treatment of otherwise significant CAD being undertreated and improve cardiovascular care in Nigeria.

REFERENCES

1. Mozaffarian D, Benjamin EJ, Go AS, *et al.* Heart disease and stroke statistics- 2015 update: a report from the American Heart Association. *Circulation*. 2015; 131:e29-322.
2. Benjamin EJ, Muntner P, Alonso A, Bittencourt MS, Callaway CW, Carson AP, *et al.* on behalf of the American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart Disease and stroke statistics-2019 update: a report

- from the American Heart Association. *Circulation* 2019; 10:1161/CIR.0000000000000659.
3. Almahmeed W, Amaout MS, Chettaoui R, Ibrahim M, Kurdi MI, Taher MA, *et al.* Coronary artery disease in Africa and the Middle East. *Ther Clin Risk Manag*. 2012; 8:65-72.
4. Sliwa K. The heart of Africa: succeeding against the odds. *Lancet* 2016; 388(10063):e28-e36.
5. Mensah GA. Ischemic heart disease in Africa. *Heart* 2008; 94(7):836-43.
6. Steyn K, Sliwa K, Hawken S, Commerford P, Onen C, Damasceno A, *et al.* Interheart Investigators in Africa. Risk factors associated with myocardial infarction in Africa. *Circulation* 2005; 112(23):3554-61.
7. Akintunde AA, Opadijo OG. Clustering of metabolic syndrome and obstructive sleep apnoea- syndrome Z among adults Nigerians with systemic hypertension: Prevalence and clinical correlates. *International Journal of Cardiovascular Research*. 2012; 1:5.
8. Oguoma VM, Nwose EU, Ulasi II, Akintunde AA, Chukwukelu EE, Bwititi PT, *et al.* Cardiovascular disease risk factors in a Nigerian population with impaired fasting blood glucose and diabetes mellitus. *BMC Public Health*. 2017; 17:36.
9. Akintunde AA. Heart failure subjects among Africans: Any contributions from coronary artery diseases? An electrocardiographic and echocardiographic analysis. *JMR*. 2016; 2(3):77-80.
10. Hellermann JP, Jacobsen SJ, Redfield MM, Reeder GS, Weston SA, Roger VL. Heart failure after myocardial infarction: clinical presentation and survival. *Eur J Heart Fail*. 2005; 7:119-125.
11. Karaye KM, Akintunde AA, Olusegun-Joseph A, Balarabe SA, Okunowo BO, Opadijo OG, *et al.* Mortality and Co-morbidities among hospitalized hypertensives in Nigeria. *International Cardiovascular Forum Journal*. 2017; 11:37-41.
12. Hertz JT, Reardon JM, Rodrigues CG, de Andrade L, Limkakeng AT, *et al.* Acute Myocardial infarction in sub-Saharan Africa: The need for Data. *PLoS One*. 2014; 9(5):e96688. Doi:10.1371/journal.pone.0096688.
13. Ogunowo PO, Ekpo EB, Odigwe CO, Andy JJ. A clinical profile of patients with coronary artery disease in Nigeria. *Trop Geogr Med*. 1989; 41(3):242-6.
14. Adeoye AM, Adekunle AN, Adekunle AA, Mullassari A, Vijayakumar S, Nwafor CE. A 45 year old man with recurrent syncope: an unusual presentation of coronary artery disease. *Pan Afr Med J*. 2013; 14:71.
15. Roth GA, Johnson C, Abajobir A, Abd-Allah F, Abera SF, Abyu G, *et al.* Global, regional and National Burden of Cardiovascular Diseases for 10 causes, 1990-2015. *J Am Coll Cardiol*. 2017; 70(1):1-25.
16. Essien OE, Andy J, Ansa V, Otu AA, Udoh A. Coronary artery disease and the profile of cardiovascular risk factors in South-south Nigeria: a clinical and autopsy study. *Cardiol Res Pract*. 2014; 2014:804751.
17. Johnson A, Falase B, Ajose I, Onabowale Y. A cross sectional study of stand-alone percutaneous coronary interventions in a Nigerian cardiac catheterization laboratory. *BMC Cardiovasc Disord*. 2004; 16:14.
18. Rotimi O, Ajayi AA, Odesanmi WO. Sudden unexpected death from cardiac causes in Nigerians: a review of 50 autopsied cases. *Int J Cardiol*. 1998; 63(2):111-5.