

AFRICAN VOICES

Pattern of presentation of coronary artery disease in hypertensive patients in Sudan

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Hypertension is a common disease worldwide and is emerging as a public health problem in most developing countries. The disease is characterised by complications resulting in target organ involvement, associated with high morbidity and mortality. In the Sudan, the pattern of hypertensive target organ complications was found to be comparable to that of neighbouring North African countries, but distinct from that shown in black individuals outside the African continent.¹ Hypertensive heart disease, rheumatic heart disease, ischaemic heart disease (IHD) and cardiomyopathy constitute more than 80% cardiovascular diseases in Sudan.² Hypertension, either systolic/diastolic or isolated systolic, is considered a major risk factor for coronary artery disease (CAD). Hypertensives have a threefold increase in cardiac death (due to either coronary events or to cardiac failure).³

Evaluating chest pain in hypertensive patients presents challenges because besides CAD, left ventricular hypertrophy (LVH) is a cause of chest pain and shortness of breath.⁴ A hospital-based study in Ahmed Gasim hospital in Khartoum,

north Sudan aimed to assess CAD as a cause of chest pain. The study investigated the pattern and severity of CAD and associations between ECG, echocardiography, and coronary angiography findings. We recruited 135 known hypertensive patients presenting with chest pain aged between 39 – 90 years, with mean age of 59 years, and SD of 10 years and 60.7% of the study population were men. The exclusion criteria were smoking, diabetes and family history of CAD. Age, gender, duration of hypertension and body mass index (BMI) were considered as covariates. Hypertension period ranged between 6 months and 30 years, with a mean of 10.4 (SD of +/- 6 years). In 33.1% of the patients, BMI was > 30 kg/m². CAD was assessed through abnormalities in ECG, echocardiographic measurements, and cardiac catheterization. Coronary angiography results showed that 73.3% of the patients had CAD, of whom 26.7% had three coronary vessel disease (3VD). Left anterior descending (LAD) artery was the main presentation, followed by right coronary artery (RCA), circumflex artery (CX), then lastly the left main (LM).

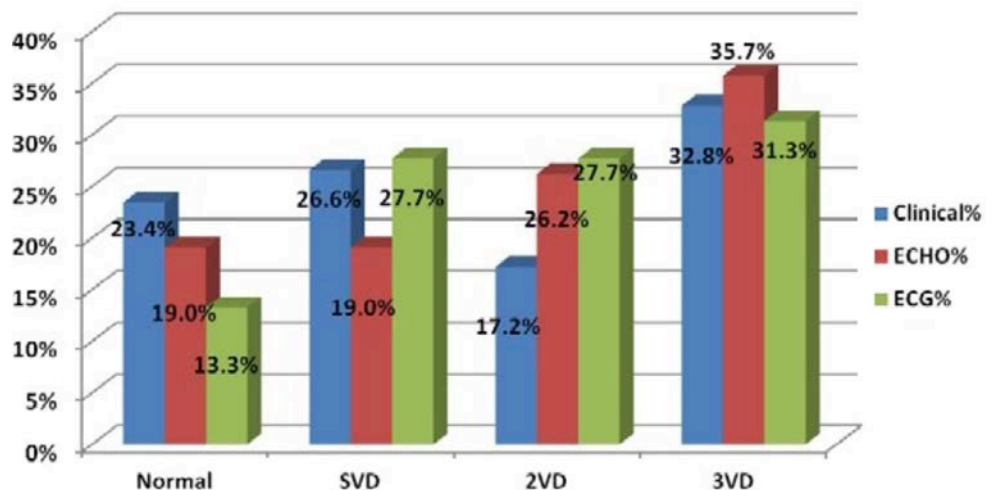
Figure 1: The pattern of coronary involvement in the study population

Abbreviations:

SVD, single vessel disease;

2VD, 2 vessel disease;

3VD, 3 vessel disease



The overall ranking of severity as assessed through the recommendation for treatment was percutaneous coronary intervention (PCI) in 31.4%, coronary artery bypass graft (CABG) in 21.6%, 33% and 25% of these patients have had hypertension for more than 10 years. The LAD is the commonly involved artery due to the bulk of muscles supplied. Strong association between ECG LVH and CAD was found. These results are comparable with the data from the Second National Health and Nutrition Examination Survey (NHANES II) that suggesting that the presence of ECG LVH is a strong predictor of future cardiovascular death.⁵ Duration of hypertension with the poor control and lack of compliance with medication is directly related to severity of CAD as in other studies.

In conclusion, the main cause of chest pain in hypertensive patients was found to be CAD (73.3%). Aging, BMI, duration, and magnitude of

hypertension had strong and frequent association with CAD. LAD was the most evident, followed by RCA then the CX, the LM was the least. A further observation was that ECG LVH is strongly associated with CAD more than echocardiographic LVH.

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