

# Brief communications

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## A survey for cardiovascular disease in middle-aged Ugandans\*

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### Abstract

*A study of 412 persons aged at least 45 years showed that cardiovascular disease, especially hypertension, was common. Cardiac enlargement was the most frequent complication of hypertension; cerebrovascular accidents were rare. Cardiomegaly without hypertension or valvular disease was found in 29 persons. Valvular disease was present in 17 persons, but was symptomless in all but 3 cases.*

There is a dearth of information on the magnitude of cardiovascular disease in middle-aged and elderly Africans. The available data relate to hospital patients below 45 years of age, who form the bulk of such patients. In 1972 Kakande et al. studied a sample of elderly patients seeking treatment at the Kasangati Health Centre, near Kampala. A quarter of these patients showed evidence of cardiac enlargement or heart failure. The field study reported in this preliminary communication attempted to establish the extent to which cardiovascular disease was responsible for morbidity in such persons.

### Material and methods

A total of 412 volunteer villagers aged 45 years and over had a full physical examination and a chest radiograph on 70-mm film. The criterion for admission to the study was a well-centred chest radiograph. From such films the cardiothoracic ratio and the aortic arch width were determined. Individuals with cardiomegaly (cardiothoracic ratio  $\geq 55\%$ ) later had a packed cell volume determination and an electrocardiogram.

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\* Preliminary communication. A more detailed report of the findings will be published elsewhere.

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### Results

A summary of the principal findings is presented in Table 1. The mean systolic pressure rose with age in both sexes, but in the age group 55–74 years it was higher in women than in men. This cross-over was associated with the presence, in that age group, of a high proportion of women with hypertension. The proportion of individuals with hypertension (blood pressure  $> 160/95$  up to 60 years and  $> 170/95$  after 60 years) increased with age and was considerably higher among women than in men in the age group 55–74 years. This difference was statistically significant (SE: 8.2%) for the age group 55–64 years). The incidence of hypertension in the study population as a whole was 33.7%.

Cardiomegaly occurred in 33 out of 139 persons with hypertension (23.7%). Hypertensive heart failure was recognised in 3 individuals and 3 others had a cerebrovascular accident. The latter 3 were ambulant and only 2 of them had hypertension. Narrowing of the venules at arteriovenous crossings was seen in the optic fundi of 10.1% of the patients with hypertension. No grade 3 or grade 4 retinopathy was found in any patient.

The proportion of individuals with cardiomegaly also increased with age, mainly because of an increase in the proportion of individuals with cardiomegaly due to hypertension. However, 29 persons had cardiomegaly without hypertension or valvular disease. Women were more frequently affected than men, although the difference was not significant (males, 6.29%; females, 11.2%). The mean packed cell volume in individuals with obscure cardiomegaly was 40.6% for males and 39.8% for females, compared with 44.4% and 40.9%, respectively, in a control group with hypertension and cardiomegaly. Only two subjects with cardiomegaly had clinically recognisable anaemia, to which their cardiomegaly could have been attributed.

One individual out of a control group of 551 gave a history of angina—an incidence of 0.2%. In contrast, of 27 persons with cardiomegaly but without hypertension or valvular disease, 8 had a history of

Table 1. Summary of survey findings.

Sex	Age (years)	No. examined	Incidence (%)			
			hypertension	cardiomegaly in persons with hypertension	cardiomegaly without cardiovascular disease	gros dilatation of the aorta
male	<45	18	11.1	—	—	—
	45–54	75	28.0	14.3	4.0	3.4
	55–64	74	24.3	16.7	10.8	8.1
	65–74	65	38.5	24.0	7.7	13.2
	>74	28	42.9	33.3	—	24.0
female	<45	6	16.7	—	—	—
	45–54	40	25.0	10.0	15.0	3.3
	55–64	60	53.0	28.1	8.3	9.3
	65–74	37	43.2	37.5	13.5	23.1
	>74	9	22.2	—	11.1	25.0
Total		412	33.7	23.7	7.0	8.3

angina—an incidence of 29.6% (SE: 8.8%). Minor Q/QS abnormality occurred in the electrocardiogram of only one subject with obscure cardiomegaly.

The mean aortic arch diameter in normotensive persons was  $18.1 \text{ mm} \pm 2.7$  for males and  $16.8 \pm 2.5$  for females. Taking as grossly dilated aortic shadows exceeding the sum of the mean and twice the standard deviation for each sex (i.e., males:  $> 23.5 \text{ mm}$ ; females:  $> 21.8 \text{ mm}$ ), gross widening of the aorta occurred in 7.7% of males and 9.2% of females. No individuals with gross dilatation of the aorta had clinical evidence of aortic valve disease.

Mitral regurgitation was recognised in 6 females and 4 males (2.4%) aged 50–75 years. All were presumed to be rheumatic. Aortic regurgitation was present in 4 females and 2 males (1.5%) aged 50–81 years; aortic stenosis occurred in one person. No individual had lesions involving two valves.

Incidental radiographic findings included emphysema in 11 persons; extensive fibrotic changes in one or both lower zones, associated with pleural thickening and tenting of the diaphragm (6 persons); multiple foci of calcification in a grossly dilated aorta (2 persons); and pulmonary tuberculosis (12 persons). An obstructive uropathy was found in 9 individuals; in only 2 of them was it associated with hypertension. Finally, 7 subjects had bronchial asthma and 6 diabetes mellitus.

### Discussion

Considerable cardiovascular abnormality apparently exists in elderly Ugandans. The most important abnormality in our study population was hypertension that had largely gone unrecognized. On clinical grounds only, most of these individuals were thought to have essential hypertension. The commonest complication was cardiomegaly. In contrast, cerebrovascular accidents were rare. It is possible that deaths from that cause occurred early in some cases or that bedridden cases were not seen. However, in an analysis of causes of death over a 5-year period in Kasangati, Namboze (unpublished data, 1973) found only 2 cases among 257 deaths.

Cardiomegaly of obscure pathogenesis occurred in 7% of our study population. The affected individuals are thought to have a pathogenetic link with patients with idiopathic cardiomegaly. This condition has been reported from both Uganda and Jamaica (Tulloch et al., 1968; Stuart & Bras, 1971). In both countries, the middle-aged population is characterized by an increasing proportion of subjects with cardiomegaly but without hypertension or valvular disease. This observation supports the view that an etiological relationship exists between such individuals and cases of idiopathic cardiomegaly. In both Uganda and Jamaica, a high proportion of individuals with obscure cardiomegaly responded

positively to a questionnaire on angina. In the Jamaican series, disease of the intramural coronary arteries is thought to have been responsible for both the angina and for ECG evidence of ischaemic heart disease. In our series, however, abnormal electrocardiograms suggestive of ischaemic heart disease were uncommon.

Brockington & Bohrer (1969), after a study of aortic arch width in myocardial failure, suggested that idiopathic cardiomegaly may be a form of hypertensive heart disease. Ikeme et al. (unpublished observations, 1973) observed that widening of the aorta and cardiomegaly were associated in normotensive subjects, suggested that the same cause (i.e., hypertension) might be responsible for both phenomena, and drew attention to reports of remission of hypertension in Africans (Carlisle, 1971). This observation has not been supported by the present study. Our group with obscure cardiomegaly had a slightly lower mean packed cell volume than controls with cardiomegaly and hypertension. Although this difference was not significant, it is possible that anaemia may contribute to the development of cardiomegaly. We have tentatively concluded that the obscure cardiomegaly that we have observed must have a multifactorial pathogenesis; that anaemia, hypertension, disease of the coronary arteries, and possibly chronic malnutrition may contribute in varying degrees to its development; and that the operation of these factors may ultimately lead to heart failure.

Gross aortic arch dilatation in our subjects was clearly not syphilitic in origin. The peak incidence in the oldest age groups suggests that aortic dilatation may be a degenerative process. Moreover, luetic aortitis is an uncommon autopsy finding in Kampala.<sup>1</sup> Valvular disease was found in 17 subjects (4.1%). It had been previously unrecognized in all but 3 individuals, and only 2 of these had had heart failure. This indicates that valvular disease was not an important source of morbidity in the elderly persons studied. These data complement hospital experience that morbidity from rheumatic valvular disease occurs predominantly before the age of 45 years, but indicate that it was still an important condition after this age. The finding of bronchial asthma in 1.7% and radiographic evidence of emphysema in 3.2% of the study population indicate the possible importance of cardiopulmonary disease in our series.

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