Aneurysmal Enlargement of the Right Atrium in an African

ASSOCIATED WITH GROSS MITRAL INCOMPETENCE AND APICAL THRILL

BY

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Aneurysmal enlargement of the right atrium is rare in the Caucasian subject and has only once been recorded previously in the African (Gelfand and Graham, 1962). In contrast to this, aneurysm of the left ventricle is well documented in African patients (MacFie and Ingram, 1920; Lurie, 1960), although unlike in the Caucasian patient, it is rarely due to myocardial infarction (Jacobs, 1952). Gross enlargement of the right atrium, however, is a feature of endomyocardial fibrosis (e.m.f.—Abrahams, 1959) which is common in West Africa and Uganda, but which has not so far been described in Central Africa. Atrial dilation has not been found to be a feature of the South African type of cardiomyopathy with endocardial fibrosis, which is well-recognised in Rhodesia (Gelfand, 1948). The purpose of this paper is to report a second case of aneurysmal dilation of the right atrium in a Central African subject, who also presented certain features in common with e.m.f.

Case Report

Meke, an African male aged about 45 years, was admitted to Harare Hospital on 15th February, 1966. He was born in Nyasaland, a member of the Chewa tribe, and had worked as a farm labourer and tractor driver in Rhodesia for the past seven years. He was married, with five children, and was accustomed to a typical African diet of maize porridge and vegetable relish. For many years he had drunk about two quarts of beer daily, which is a moderate quantity by African standards.

His illness began two years before admission, with occasional attacks of central chest pain on exertion. He began to feel vague pains in the limbs eight months before admission, but these had no specific pattern of occurrence. A month before he was seen he became breathless on exertion, with a cough productive of a little

white sputum and occasional haemoptysis, and he developed swelling of the ankles.

His past medical history included attacks of haematuria as a child and also a year before admission, which were probably due to urinary bilharziasis, and loss of the right eye in an accident. He described an isolated episode of breathlessness when he was 14, but denied any joint pains at that or any other time. No history of febrile illness was obtained.

On admission, he was orthopnoeic and required three pillows. His face looked puffy and he had pitting ankle and sacral oedema and slight ascites and the neck veins were distended 5 cm. above the clavicles but were not markedly pulsatile. Initially he had slight central cyanosis, but there was no digital clubbing. The pulse was regular, rate 80 per minute and of good volume and his blood pressure was 140/100 mm. Hg.; the fundi appeared normal.

His liver was enlarged about 5 cm. and was tender, with a smooth margin. There were fine crepitations at both lung bases. The cardiac apex was felt on the 6th left intercostal space in the anterior axillary line. Its quality was heaving and there was a marked apical systolic thrill. A right parasternal heave was felt, but this disappeared within about three weeks after treatment of his heart failure. There was a loud systolic murmur which obscured the first heart sound, was heard best at the apex and was conducted into the axilla. The second sound was split but was not accentuated in the pulmonary area. There were no signs of disease of the tricuspid valve.

His electrocardiogram showed right ventricular preponderance, but no peaking of the P waves. (Fig. 1). The chest radiograph showed a large heart with considerable right-sided enlargement (Figs. 2 and 3).

The results of other investigations were: haemoglobin 13.4 grams per cent., white blood cells 6,200/c.mm. (eosinophils 9 per cent.), urea 40 mg. per cent., Wasserman reaction negative, antistreptolysin titre 100 Todd units. The urine contained leucocytes +++ and a trace of protein, but no bilharzial ova were present and it

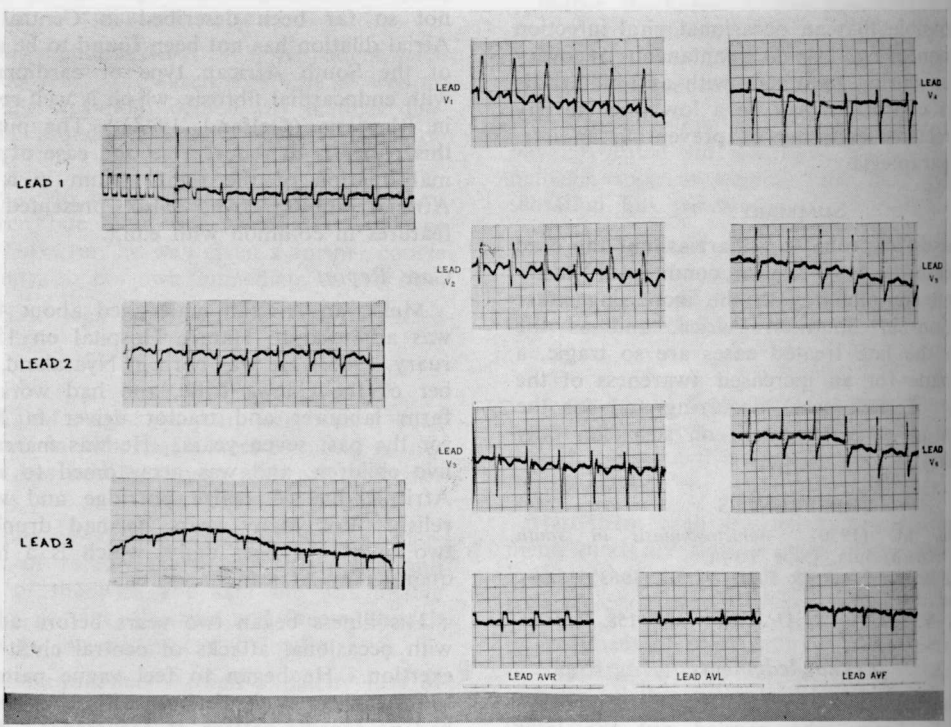

Fig. 1.—Electrocardiogram, showing right ventricular preponderance and partial right bundle branch block.

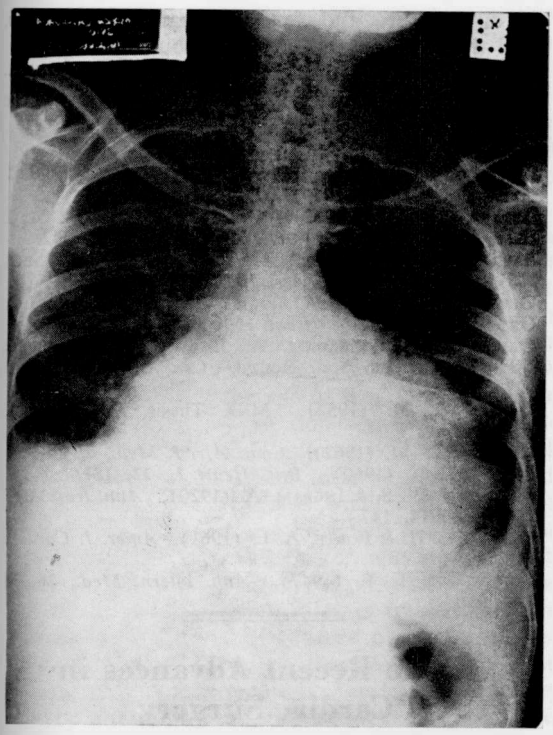

Fig. 2.—Radiograph of chest (P.A. view) showing cardiac enlargement, with left ventricular enlargement and special prominence of the right border of the heart.

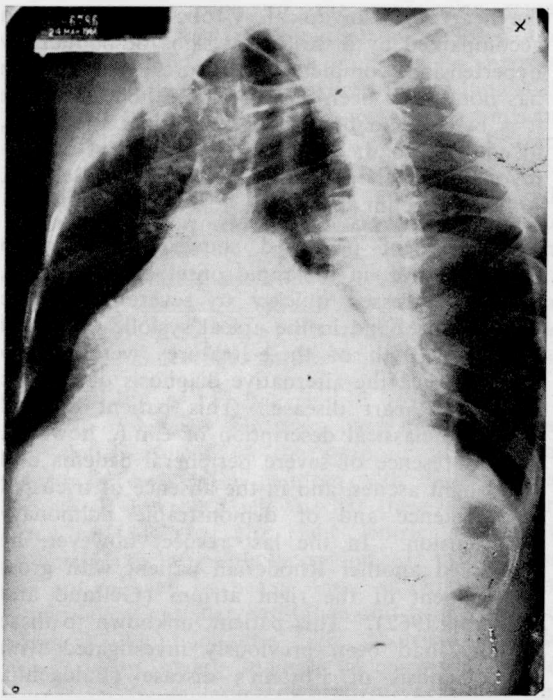

Fig. 3.—Left anterior oblique view. The right border of the heart is displaced antero-laterally owing to enlargement of the right atrium. Enlargement of the left ventricle is also demonstrated.

was sterile on culture. The intravenous pyelogram was normal, and there was no evidence of bladder calcification.

At this stage it was suspected that the cardiac enlargement might conform to the type described in e.m.f. Fluoroscopy (carried out by Dr. G. Muller) showed no evidence of left atrial enlargement. Cardiac catheterisation was performed by Mr. A. J. P. Graham on 9th March, 1966. There was a large right atrium in which the catheter persisted in forming a large loop and from which it was passed distally only with difficulty after repeated attempts. The right atrial pressure was 0-4 mm. Hg. Pressures and tracings excluded tricuspid incompetence as a possible cause of atrial enlargement. The right ventricle was also much enlarged but showed a normal ventricular pressure of 28/0 mm. Hg. The pulmonary artery pressure was also normal (28/8 mm. Hg.). Cardiac output was 5.5 litres/minute and the pulmonary resistance was two units. There was no evidence of any sort of intracardiac shunt. Unfortunately, owing to the enlarged atrium and ventricle it was not possible to obtain a pulmonary wedge pressure even using the full length of the catheter so the presence of mitral incompetence could not be directly proved.

Angiocardiography was performed by Dr. P. van Wijk on 30th March, 1966, and confirmed the presence of gross enlargement of the right atrium and right ventricle.

The patient responded slowly to treatment with Digitalis and diuretics, and signs of congestive heart failure eventually disappeared completely. The heart did not shrink appreciably, however, and the murmur remained unchanged. Meke was discharged home on 7th April, 1966.

DISCUSSION

Dilation of the right atrium is a well-recognised feature of endomyocardial fibrosis in West Africa (Abrahams, 1963) and this is also a common form of heart disease in Uganda (Williams, *et al.*, 1954). This condition presents clinically with signs of congestive heart failure characterised by elevated venous pressure and marked ascites, but dependant oedema is unusual. Enlargement of

the heart with an apical systolic murmur, often accompanied by a thrill, and signs of pulmonary hypertension, complete the picture. This disease has not so far been described in Rhodesia where it is believed to be rare if indeed it exists at all, in contrast to the South African type of cardiomyopathy with endocardial fibrosis. (Gelfand, 1948; Baldachin, 1959).

The patient presented showed similarity to cases of e.m.f. in the rapid onset of his disease, which progressed quickly to severe congestive heart failure, and in the apical systolic thrill and murmur. Both of these features were felt to argue against the alternative diagnosis of chronic rheumatic heart disease. This patient differed from the classical description of e.m.f., however, in the presence of severe peripheral oedema and only slight ascites, and in the absence of tricuspid incompetence and of demonstrable pulmonary hypertension. In the last respect however, he resembled another Rhodesian patient with gross enlargement of the right atrium (Gelfand and Graham, 1962). This patient, unknown to these authors, had been previously investigated with the diagnosis of Ebstein's disease (Baldachin, *et al.*, 1962), although later investigations were felt to rule out this condition, and to support a diagnosis of cryptogenic cardiomyopathy (Krikler, 1962; Gelfand, 1962).

Previous cases of isolated right atrial enlargement have been recorded in Caucasian subjects (Rosenbaum, 1941; Pastor and Forte, 1961), but these differ from the present case in the absence of left-sided cardiac disease.

CONCLUSIONS

We present here a second case of gross atrial enlargement in an African subject, the origin of which was not discovered. The severity of the signs of mitral incompetence was suggestive of primary myocardial disease affecting the papillary muscles rather than valvulitis, but the clinical picture differed from that of previously described forms of e.m.f. in the absence of pulmonary hypertension, even after recovery from right-sided heart failure. We suggest that a search for similar cases be made. Further investigation may establish whether or not the Abrahams type of e.m.f. occurs, perhaps in modified forms, in parts of Africa where it has not previously been described.

SUMMARY

A second case of gross enlargement of the right atrium in an African subject has been described. This patient presented with congestive cardiac failure and severe mitral incompetence, and the possible aetiology is discussed.

It is suggested that a modified form of endomyocardial fibrosis may exist in an area where the disease has not so far been described.

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